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# INTEREST RATES

## HEARING

BEFORE THE

## SUBCOMMITTEE ON ECONOMIC GOALS AND INTERGOVERNMENTAL POLICY

OF THE

## JOINT ECONOMIC COMMITTEE

## CONGRESS OF THE UNITED STATES

NINETY-EIGHTH CONGRESS

SECOND SESSION

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SEPTEMBER 13, 1984

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# CONTENTS

## WITNESSES AND STATEMENTS

THURSDAY, SEPTEMBER 13, 1984


| | Page |
|---|---|
| Hamilton, Hon. Lee H., chairman of the Subcommittee on Economic Goals and Intergovernmental Policy: Opening statement | 1 |
| Penner, Hon. Rudolph G., Director, Congressional Budget Office | 2 |
| Johnson, Manuel H., Assistant Secretary for Economic Policy, Department of the Treasury | 93 |


## SUBMISSIONS FOR THE RECORD

THURSDAY, SEPTEMBER 13, 1984


| | |
|---|---|
| Johnson, Manuel H.: Prepared statement | 99 |
| Penner, Hon. Rudolph G.: | |
| Prepared statement, together with attachments | 6 |
| Response to Representative Scheuer's query regarding the economic impacts of lower U.S. interest rates | 88 |
| Response to Representative Scheuer's query regarding the history of other countries' deficits to their GNP percentages | 89 |

# INTEREST RATES

THURSDAY, SEPTEMBER 13, 1984

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON ECONOMIC GOALS
AND INTERGOVERNMENTAL POLICY
OF THE JOINT ECONOMIC COMMITTEE,
*Washington, DC.*

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 1310, Longworth House Office Building, Hon. Lee H. Hamilton (chairman of the subcommittee) presiding.

Present: Representatives Hamilton and Scheuer.

Also present: James K. Galbraith, deputy director; Charles H. Bradford, assistant director; and William R. Buechner, professional staff member.

## OPENING STATEMENT OF REPRESENTATIVE HAMILTON, CHAIRMAN

Representative HAMILTON. The meeting of the Subcommittee on Economic Goals and Intergovernmental Policy of the Joint Economic Committee will come to order.

The subject of today's hearing is interest rates.

During the past year, interest rates have risen sharply. Most short-term interest rates are 1½ to 2 full percentage points higher than they were last September. Most longer term interest rates are up 1 to 1½ points. There is fear that high and rising interest rates will eventually halt the current expansion of the American economy.

In July and August, we enjoyed a brief respite, as most interest rates leveled off and some long-term rates even fell a bit. But the lull seems to be over and, with $170 billion to $200 billion Federal deficits facing us for the rest of this decade, it seems inevitable that interest rates will soon resume their upward trend.

There is room to debate how badly current interest rates are harming the economy. But no one can doubt that the outlook would be much brighter if deficits were lower and interest rates were lower. There are already signs of strains—in homebuilding, which has peaked out well below the peak reached during previous recoveries, and in manufacturing, which has been put at a competitive disadvantage by the high dollar. If interest rates keep rising, the strains will only become more pronounced and more widespread.

No one wants the current expansion to be undermined by high interest rates. The purpose of this hearing is to examine the current state of interest rates and look for ways of bringing them under control. Our witnesses have been asked to address the following questions:

What is the outlook for interest rates?

What is the relationship between the deficit and interest rates?

What effect are high interest rates having on the American economy?

What can be done to reduce interest rates?

Our opening witness will be Rudolph Penner, Director of the Congressional Budget Office, who will be followed by Manuel Johnson, Assistant Secretary for Economic Policy in the Department of the Treasury.

Mr. Penner, you have a prepared statement. That statement, of course, will be entered in the record in full and you may proceed to read or summarize it as you choose.

## STATEMENT OF HON. RUDOLPH G. PENNER, DIRECTOR, CONGRESSIONAL BUDGET OFFICE

Mr. PENNER. Thank you very much, Mr. Chairman. I would prefer just to summarize it.

It is a pleasure to be here today to discuss the views of the Congressional Budget Office on the outlook for interest rates, the deficit, and the economy.

CBO's current forecast is for slower but still substantial growth through next year. Inflation is expected to be moderately higher and unemployment moderately lower.

In the CBO forecast, both short-term and long-term interest rates decline gradually but by small amounts between now and the end of 1985. Both nominal and real interest rates are extraordinarily high compared to historical experience. As shown in our figure 1, interest rates in the 1980's have been far above their levels earlier in the postwar period. Although nominal interest rates have recently been well below levels reached in the early 1980's, real Treasury bill rates—that is, nominal rates less the rate of inflation—have declined less significantly.

Few analysts believe that they know all the reasons why rates are so high; nor do they agree on the relative importance of the reasons that have been identified. Some evidence indicates that inflationary fears play a role in keeping rates high, because many financial market participants still lack confidence that the double digit inflation rates of the 1970's are, in fact, behind us. Some observers also argue that volatility in interest and money growth rates has pushed up interest rates by increasing uncertainty. Many other observers point to deregulation of the financial markets. There's probably a grain of truth in all of these explanations. Moreover, there might be other factors that have not been identified yet.

Most economists, though not all, assign an important role to the Federal deficit in keeping real interest rates high. Federal credit requirements now amount to 5 percent of GNP, and when added to the strong borrowing of the private sector, they imply an extraordinary total demand for credit.

To an important extent, that demand is being financed by net inflows from international capital markets, which in turn are attracted in large measure by the fact that interest rates are higher here than in other major countries.

The expectation that budget deficits will continue at the unprecedented peacetime level of between 4 and 5 percent of GNP under

current policies is undoubtedly playing a role in holding long-term rates above short-term rates. For most of the past 2 years the differential between long and short rates has been exceptionally large. Moreover, the differential has not followed a downward trend during the recovery in contrast to the usual pattern during such periods.

CBO's budget projections show that the Deficit Reduction Act of 1984 has nearly stabilized the deficit for the next several years at just less than 5 percent of the GNP. But it maintains the deficit at such a high level that the ratio of the stock of Federal debt to GNP is projected to continue to rise.

This prospect is extremely worrisome. Many analysts believe that the stock of debt relative to GNP, rather than the deficit per se, works most directly to affect the level of interest rates and through them the level of private investment.

Quite apart from that, the rapid growth in debt means rapid growth in budget outlays for interest payments in the future even if interest rates stay the same.

As for monetary policy, it has had to contend with some extremely difficult challenges since the trough of the recession. Its goal has been to provide enough liquidity to allow a strong recovery, but not so much as to convert that recovery into an inflationary boom. In doing this, it has had to contend with a flood of Government debt into the marketplace. Indeed, the stock of Federal debt in the hands of private investors has recently been growing at an annual rate of between 15 and 20 percent.

Domestically, monetary policy has also been confronted with threats to the solvency of several major banks, the largest being Continental Illinois. At the same time, policy has had to remain concerned about its international implications, especially as they pertain to the viability of the LDC debt.

So far, these challenges have been met remarkably well. The current recovery is the second most vigorous in postwar history and there are still no signs of accelerating inflation. The M1 and M2 monetary aggregates are well within their target ranges. Further, over the last 2 years, interest rates have been much more stable—though at extremely high levels—than they were in the previous 3 years.

Monetary policy works with a considerable time lag, however, and the successes of the immediate past do not necessarily prove the wisdom of the current monetary stance. Some observers, pointing to the lack of any evidence of accelerating inflation and to the depressed prices of gold and certain other commodities, believe that the Federal Reserve could afford to be more expansionary. Others cite increased capacity utilization and the gradual tightening of labor markets over the last year to support their view that there is a real danger of future inflation.

CBO's forecast lies between these possibilities. We believe that a policy that keeps money growth during 1984 and 1985 near the centers of the target ranges announced by Chairman Volcker on July 25 is likely to be consistent with a relatively slight increase in inflation and a slight moderation in economic growth. Those wishing to judge the appropriateness of current monetary policy should decide whether this forecast seems reasonable, and what risks there are in faster or slower monetary growth.

Turning to the particular issue of deficits and interest rates, few empirical studies have uncovered a clear casual link between deficits

and interest rates, and this has led some observers to question whether current concerns about the deficit outlook are warranted. Most of the studies, however, that have been published to date—both those that find no relationship as well as those that do—base their conclusions on tenuous evidence. Three CBO staff economists have recently reviewed the literature, and I have attached that review for the record. They found that many of the statistical results, whether supporting or belying a relationship between deficits and rates, could be reversed by making minor changes in specifications. In other words, few of the conclusions are reliable and the overall inference should be that the data are inconclusive.

One can easily imagine why many of these studies may have failed to come to grips with the deficit/interest-rate question. Many of them tested relatively simply hypotheses embodied in single equations, while a correct but considerably more complicated approach would have to take explicit account of non-Federal credit demands as well as many other factors. Moreover, many economists have attempted to associate deficits directly with the level of interest rates. As I noted earlier, however, interest rate levels may be determined by the stock of debt, among other factors. Under this hypothesis, the deficit, which determines changes in the stock of debt, would be associated with changes in the level of interest rates—a very different relationship.

One would expect that the effects of today's high real interest rates would result in depressed levels of spending in such interest-sensitive domestic sectors as housing, nonresidential construction, producers' durable equipment, and consumer durables. In fact, the evidence is mixed. Two of the sectors, as you noted in your opening statement—housing and nonresidential structures—account for a smaller share of GNP than at comparable stages of earlier recoveries, but the other sectors do not. Moreover, all except nonresidential construction have grown more rapidly since the recession trough than during earlier recoveries.

How did this happen in the face of high interest rates? One factor that helped shield investment from high rates was the investment-stimulating effect of the Economic Recovery Tax Act of 1981. CBO has calculated the combined effects of changes in interest rates and in tax provisions on the overall cost of business fixed investment. The results, shown in figure 3, suggest that the tax cut offset most, though not all, of the effects of increases in interest rates during 1981 and 1982, and helped give a real push to investment when rates fell in late 1982. Both the rise in interest rates and the tax reductions have had proportionately greater effects on nonresidential structures than on producers' durable equipment, which are shorter-lived capital goods. A more detailed discussion of these results is contained in a CBO study that I am also attaching.

Investment could also have been stimulated by the strength of the recovery, which may have overcome the effects of high rates by convincing firms that they needed to expand or modernize capacity to meet growing demands for their products. Several other factors specific to equipment investment have helped to account for this particular sector being the strongest component of investment. The relative prices of business equipment have been declining, in part because much of this capital is imported and has benefited from rising dollar exchange rates. Equipment spending has also been strengthened by a push to

modernize with computers and other products of the wave of electronic innovations of recent years.

Two others factors also help to explain the strength of investment. One is the pent-up demands for both business capital and housing that accumulated during the recession; another is the introduction of adjustable rate mortgages with rates well below those on conventional loans. In any case, the result has been to limit any crowding out of private investment during the economic upswing.

The ability to borrow in international capital markets has certainly mitigated to some degree the crowding out of domestic investment, although this simply means that crowding out has been transferred to our trading sector. U.S. interest rates have risen above those in other countries, helping to attract a heavy inflow of foreign savings. The demand for dollars to use in buying U.S. assets has bid up dollar exchange rates, which in turn have raised the prices of U.S. goods relative to foreign goods. Spending patterns have shifted accordingly, leaving those sectors of the U.S. economy that are involved in international trade in a depressed state. Moreover, the capital borrowed from abroad imposes direct longrun costs on the economy in that a growing proportion of our future national output will have to be devoted to paying interest and dividends to foreign residents.

Increases in U.S. interest rates have imposed particularly significant costs on debt-burdened Third World countries by increasing the amount of interest they owe to foreign lenders. At the same time, however, the rising dollar exchange rates that accompany rises in U.S. interest rates encourage these countries' exports to the United States, on which they depend heavily for foreign exchange with which to pay their debts. Rapid economic expansion in this country has added further to the demand for their products. Nevertheless, high interest rates divert foreign exchange into interest payments, and have forced many countries to limit their imports from the United States, thus adding to U.S. trade problems.

In conclusion, the economic outlook for 1984 and 1985 is bright despite high interest rates and despite several risks that are being exacerbated by large budget deficits. The most important risks in the outlook include: Higher inflation; sudden reductions in foreign inflows of capital; and the possibility of financial instabilities.

CBO does not expect these risks to materialize during the forecast period. Nevertheless, it is important to place a high priority on reducing Federal deficits if only to curb the extraordinary growth in the cost of servicing the debt. If the deficit could be reduced to the point where the debt-to-GNP ratio began to decline, debt servicing costs would fall substantially—even if interest rates remained constant. What is now a major part of the budget problem—that is, the rising interest bill—could then be converted into a major part of the solution to our difficulties. In addition, if a falling debt-to-GNP ratio were to result in falling interest rates, it would have a further beneficial and compounding effect—making the budget problem even more tractable, and improving the potential for economic growth.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Penner, together with attachments, follows:]

PREPARED STATEMENT OF HON. RUDOLPH G. PENNER

Mr. Chairman, it is a pleasure to be here today to discuss the views of the Congressional Budget Office (CBO) on the outlook for interest rates, the deficit, and the economy.

## INTEREST RATES AND THE ECONOMIC AND BUDGET OUTLOOK

CBO's current forecast, which is summarized in Table 1 and discussed in detail in our recent report on The Economic and Budget Outlook: An Update, is for slower but still substantial economic growth through next year. Inflation is expected to be moderately higher next year compared with this year, and unemployment moderately lower.

In the CBO forecast, both short-term and long-term interest rates decline gradually between now and the end of 1985. These declines are not very large, however: the average 1985 level of the three-month Treasury bill rate is 9.7 percent in the forecast, only about seven-tenths of a percentage point below current levels. Longer-term rates represented by Moody's AAA-rated corporate bond yield are projected to average a bit less than 12.5 percent during 1985, down only slightly from current levels. In other words, CBO does not anticipate that either nominal rates or real rates (nominal rates adjusted for inflation) will decline dramatically from their current levels.

Both nominal and real interest rates are extraordinarily high compared to historical experience. As shown in Figure 1, interest rates in the 1980s have been far above their levels earlier in the postwar period. Although

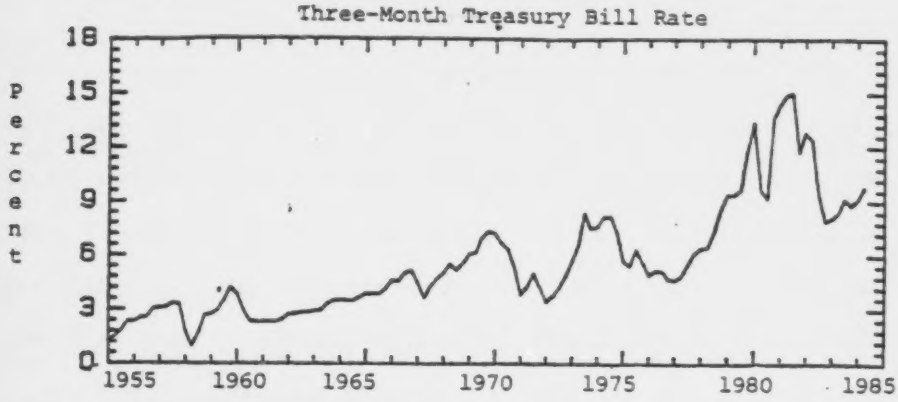
TABLE 1. THE CBO FORECAST FOR 1984 AND 1985

| | Actual | | Forecast | |
|---|---|---|---|---|
| | 1982 | 1983 | 1984 | 1985 |
| **Fourth Quarter to Fourth Quarter (percent change)** | | | | |
| Nominal GNP | 2.7 | 10.4 | 10.9 | 8.2 |
| Real GNP | -1.5 | 6.3 | 6.6 | 2.8 |
| GNP Implicit Price Deflator | 4.3 | 3.8 | 4.1 | 5.3 |
| Consumer Price Index, Urban Consumers | 4.5 | 3.3 | 4.5 | 5.2 |
| **Calendar Year Average (percent)** | | | | |
| Civilian Unemployment Rate | 9.7 | 9.6 | 7.3 | 6.7 |
| 3-Month Treasury Bill Rate | 10.6 | 8.6 | 10.0 | 9.7 |
| Corporate Bond Rate, Moody's AAA | 13.8 | 12.0 | 13.1 | 12.3 |

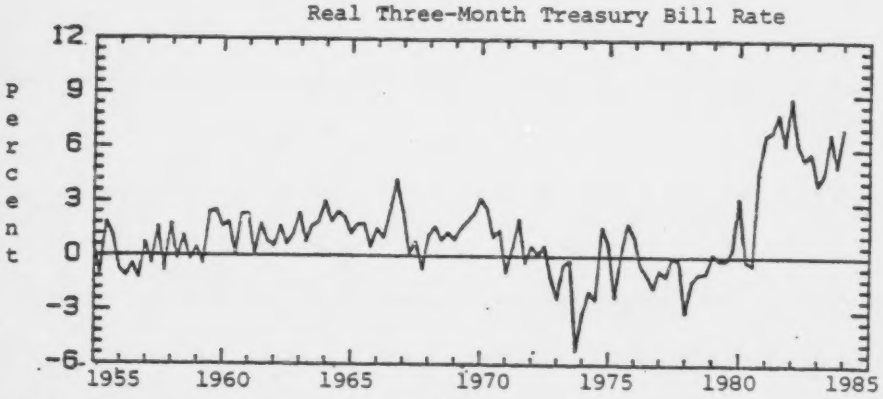
TABLE 2. UPDATED CBO BASELINE BUDGET PROJECTIONS
(By fiscal year)

| | 1983 Actual | 1984 Base | Projections 1985 | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|---|---|---|
| | | | In Billions of Dollars | | | | |
| Revenues | 601 | 673 | 751 | 811 | 881 | 965 | 1,042 |
| Outlays | 796 | 845 | 929 | 1,006 | 1,097 | 1,203 | 1,305 |
| Unified Budget Deficit | 195 | 172 | 178 | 195 | 216 | 238 | 263 |
| Total Deficit | 208 | 183 | 191 | 209 | 231 | 254 | 278 |
| | | | As a Percent of GNP | | | | |
| Revenues | 18.6 | 18.7 | 19.1 | 19.1 | 19.2 | 19.4 | 19.4 |
| Outlays | 24.7 | 23.5 | 23.7 | 23.7 | 23.9 | 24.2 | 24.3 |
| Unified Budget Deficit | 6.1 | 4.8 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 |
| Off-Budget Deficit | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Total Deficit | 6.4 | 5.1 | 4.9 | 4.9 | 5.0 | 5.1 | 5.2 |

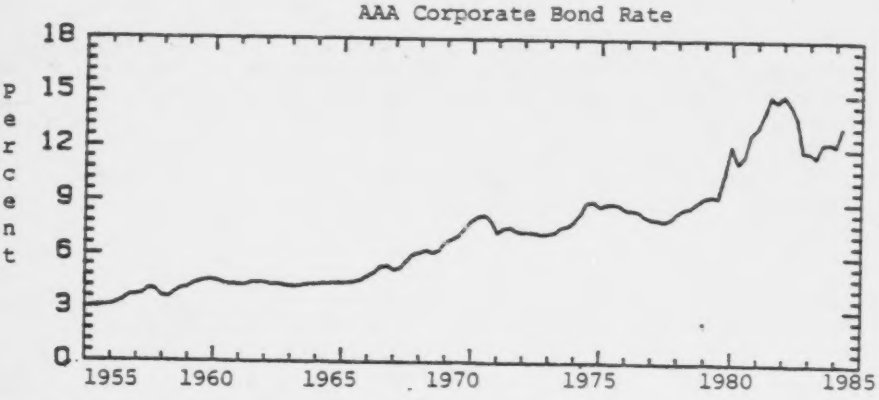
FIGURE 1. SELECTED INTEREST-RATE MEASURES, 1955-1984




SOURCE: Federal Reserve Board




SOURCE: Congressional Budget Office




SOURCE: Moody's Investors' Service

nominal interest rates have recently been well below levels reached in the early 1980s, real Treasury bill rates--nominal rates less the rate of inflation--have declined less significantly. 1/

Few analysts believe that they know all the reasons why rates are so high; nor do they agree on the relative importance of the reasons that have been identified. Some evidence indicates that inflationary fears play a role in keeping rates high, because many financial market participants still lack confidence that the double-digit inflation rates of the 1970s are, in fact, behind us. Some observers also argue that volatility in interest and money-growth rates has pushed interest rates up by increasing uncertainty. Many find still another factor in deregulation of financial markets. There is probably at least a grain of truth in all these explanations. Moreover, there may well be even other factors that no one has identified yet.

Most economists, though not all, assign an important role to the federal deficit in keeping real interest rates high. Federal credit requirements now amount to 5 percent of GNP, and when added to the strong borrowing of the private sector they imply an extraordinary total demand for credit. To an important extent that demand is being financed by

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1/ Many economists believe that real interest rates, or interest rates less expected inflation, are a more relevant measure of the true cost of borrowing than nominal rates. While the expected inflation rate is unobserved, it can be approximated by inflation as actually experienced in calculating real short-term interest rates. That is not the case for expected inflation several years in the future, and so no estimates of real long-term rates are given in Figure 1.

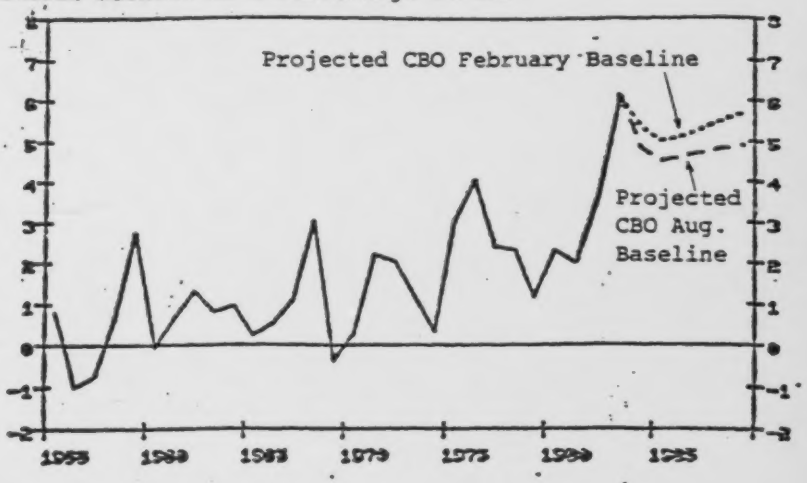
net inflows from international capital markets, which, in turn, are attracted in large measure by the fact that interest rates are higher here than in other major countries.

The expectation that budget deficits will continue at the unprecedented peacetime level of roughly 4 percent to 5 percent of GNP, unless significant changes are made in current policies, is undoubtedly playing a role in holding long-term rates well above short rates. For most of the past two years, the differential between long and short rates has been exceptionally large. Moreover, the differential has not followed a downward trend during the recovery, in contrast to the usual pattern during such periods. One way to explain this is to note that long rates reflect expectations of future short-term interest rates and inflation rates. Large expected deficits could well be raising expected short rates above current levels if financial-market participants expect a credit crunch later in the recovery. The same result could also occur if large deficits are expected to pressure the Federal Reserve into monetizing the deficit and causing higher inflation.

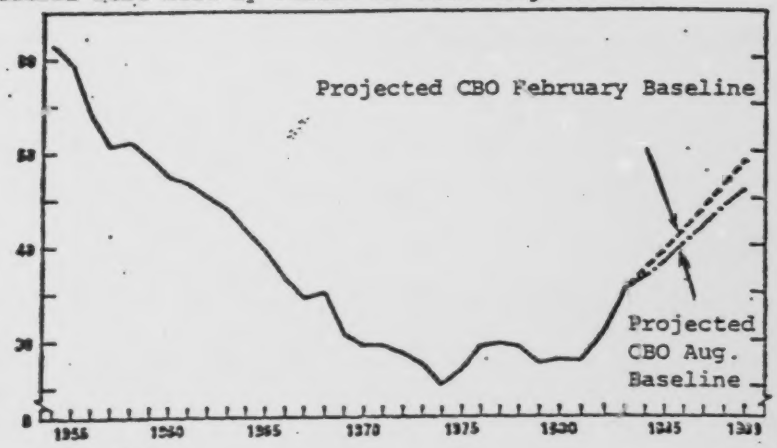
CBO's budget projections show that the Deficit Reduction Act of 1984, passed this summer, has nearly stabilized the deficit for the next several years at just less than 5 percent of GNP (Table 2 and Figure 2). But it maintains the deficit at such a high level that the ratio of the stock of federal debt to GNP is projected to continue to rise (as shown in Figure 2, second panel). This prospect is extremely worrisome. Many analysts believe that the stock of debt relative to GNP, rather than the deficit per se, works

FIGURE 2. SELECTED FISCAL MEASURES, 1955-1989 AND PROJECTIONS FOR 1984-1989 (FISCAL YEARS)

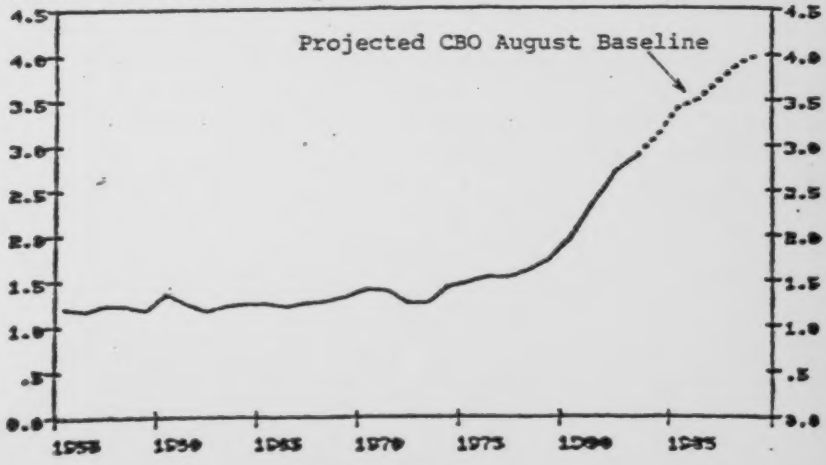
Federal Deficit as a Percentage of GNP




Federal Debt Held by Public as Percentage of GNP




Federal Net Interest Payments as Percentage of GNP




SOURCE: Congressional Budget Office.

most directly to affect the level of interest rates, and through them the level of private investment. The continuing increases in the debt/GNP ratio that are implied by current policy therefore threaten us with persistent upward pressures on interest rates, and the danger that federal borrowing will crowd private investment out of the financial markets. Quite apart from that, the rapid growth in debt means rapid growth in budget outlays for interest payments in the future even if interest rates stay the same. CBO projections, which assume interest rates near current levels for the next several years, show a rise in interest costs as a percent of GNP from 3.1 percent in 1984 to 4.0 percent in 1989, compared to an average level of 1.6 percent during the 1970s. This makes controlling deficits and stopping the growth in federal debt harder and harder as time goes on. So while the deficit-reducing legislation passed during the summer of 1984 has been a valuable step, much remains to be done.

The Role of Monetary Policy

Monetary policy has had to contend with some extremely difficult challenges since the trough of the recession. Its goal has been to provide enough liquidity to allow a strong recovery, but not so much as to convert that recovery into an inflationary boom. In doing this, it has had to contend with a flood of government debt into the market place; indeed the stock of Federal debt in the hands of private investors has recently been growing at an annual rate of between 15 and 20 percent.

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Domestically, monetary policy has also been confronted with threats to the solvency of several major banks, the largest being Continental Illinois. At the same time, policy has had to remain concerned about the international implications of its policies, especially as they pertain to the viability of the LDC debt.

So far these challenges have been met remarkably well. The current recovery is the second most vigorous in post-war history and there are still no signs of accelerating inflation. The M-1 and M-2 monetary aggregates are well within their target ranges. Further; over the last two years, interest rates have been much more stable--though at extremely high levels --than than they were in the previous three years.

Monetary policy works with a considerable time lag, however, and the successes of the immediate past do not necessarily prove the wisdom of the current monetary stance. Some observers, pointing to the lack of any evidence of accelerating inflation and to the depressed prices of gold and certain other commodities, believe that the Federal Reserve could afford to be more expansionary. Others cite increased capacity utilization and the gradual tightening of labor markets over the last year to support their view that there is a real danger of future inflation.

CBO's forecast lies between these extremes. We believe that a policy that keeps money growth during 1984 and 1985 near the centers of the target ranges announced by Chairman Volcker on July 25 is likely to result in a relatively slight increase in inflation and a moderation in growth. Those

wishing to judge the appropriateness of current monetary policy should decide whether this forecast seems reasonable, and what risks there would be in significantly faster or slower monetary growth.

Evidence on Interest-Rate Impacts of Deficits

Few empirical studies have uncovered a clear causal link between deficits and interest rates, and this has led some observers to question whether current concerns about the deficit outlook are warranted. Most of the studies, however, that have been published to date--both those that find no relationship as well as those that do--base their conclusions on tenuous evidence. Three CBO staff economists recently undertook a careful review of many of these studies (I have attached their report for the record). They found that many of the statistical results, whether supporting or belying a relationship between deficits and rates, could be reversed by making minor changes in the specification of the statistical relationships tested. In other words, few of the conclusions are reliable, and the overall inference should be that the data are inconclusive.

One can easily imagine why many of these studies may have failed to come to grips with the deficit/interest-rate question. Many of them tested relatively simple hypotheses embodied in single equations, while a correct but considerably more complicated approach would have to take explicit account of nonfederal credit demands as well as many other factors.

Moreover, many economists have attempted to associate deficits directly with the level of interest rates. As I noted earlier, however, interest rate levels may be determined by the stock of debt among other factors. Under this hypothesis, the deficit, which determines changes in the stock of debt, would be associated with changes in the level of interest rates--a very different relationship.

Even if there were compelling statistical studies showing that past deficits have had little adverse impact on interest rates or on the economy, one would have good reason to doubt their relevance to today's situation. As I have already pointed out, not since World War II have current and projected structural deficits been as large as they are now relative to GNP, and never before has the outlook been for steady increases in the federal debt relative to GNP during a period in which GNP growth is projected to exceed the long-run, full-employment growth rate.

## THE EFFECTS OF HIGH RATES ON THE OUTLOOK

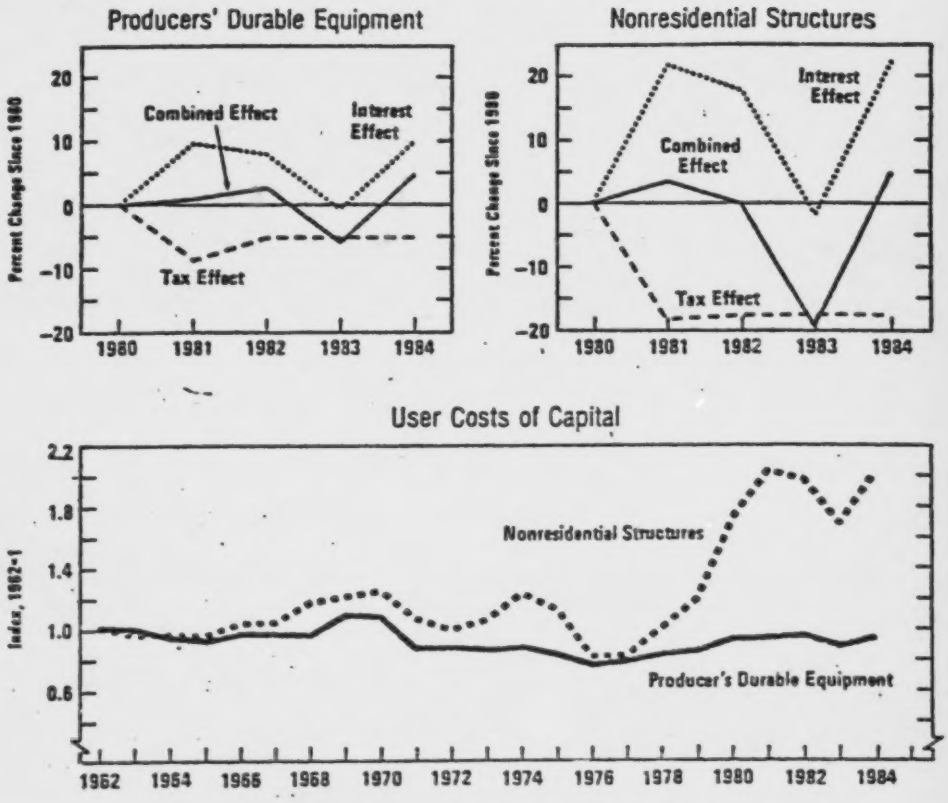
One would expect that the effects of today's high real interest rates would result in depressed levels of spending in such interest-sensitive domestic sectors as housing, nonresidential construction, producers' durable equipment, and consumer durables. In fact, the evidence is mixed. Two of these sectors--housing and nonresidential structures--account for a smaller share of GNP than at comparable stages of earlier recoveries, but the other

sectors do not. Moreover, all except nonresidential construction have grown more rapidly since the recession trough than during earlier recoveries.

How did this happen in the face of high interest rates? One factor that helped shield investment from high rates was the investment-stimulating effect of the Economic Recovery Tax Act of 1981, much of which survived the moderating provisions of the 1982 revenue-raising legislation. CBO has calculated the combined effects of changes in interest rates and in tax provisions on the overall cost of business fixed investment. The results, shown in Figure 3, suggest that the tax cut offset most, though not all, of the effects of increases in interest rates during 1981 and 1982, and helped give a real push to investment when rates fell in late 1982. Both the rise in interest rates and the tax reductions have had proportionately greater effects on nonresidential structures than on producers' durable equipment, which are shorter-lived capital goods. A more detailed discussion of these results is contained in a CBO study that I am also attaching for inclusion in the record.

Investment could also have been stimulated by the strength of the recovery, which may have overcome the effects of high rates by convincing firms that they needed to expand or modernize capacity to meet growing demands for their products. Several other factors specific to equipment investment have helped to account for this particular sector being the strongest component of investment. The relative prices of business equipment have been declining, in part because much of this capital

Figure . 3.
Sources of Change in User Costs of Capital




SOURCE: Congressional Budget Office.

NOTE: Changes in the user cost of capital shown above are the result of changes in interest rates and federal tax laws. Values for 1984 were computed on the basis of the first two quarters. The tax life for structures in 1984 was assumed to be 15 rather than 18 years because most structures put in place in 1984 are expected to qualify for the shorter tax life permitted by law.

is imported and has benefited from rising dollar exchange rates. Equipment spending has also been strengthened by a push to modernize with computers and other products of the wave of electronic innovations of recent years.

Two other factors also help explain the strength of investment. One is the pent-up demands for both business capital and housing that accumulated during the recession; another is the introduction of adjustable-rate mortgages with rates well below those on conventional loans. In any case, the result has been to limit any crowding out of private investment during the economic upswing.

The ability to borrow in international capital markets has certainly mitigated to some degree the crowding out of domestic investment, although this simply means that crowding out has been transferred to our trading sector. U.S. interest rates have risen above those in other countries, helping to attract a heavy inflow of foreign savings. The demand for dollars to use in buying U.S. assets has bid up dollar exchange rates, which in turn have raised the prices of U.S. goods relative to foreign goods. Spending patterns have shifted accordingly, leaving those sectors of the U.S. economy that are involved in international trade in a depressed state. Moreover, the capital borrowed from abroad imposes direct long-run costs on the economy in that a growing proportion of our future national output will have to be devoted to paying interest and dividends to foreign residents.

Increases in U.S. interest rates have imposed particularly significant costs on debt-burdened Third World countries by increasing the amount of

interest they owe to foreign lenders. Recent estimates suggest that aggregate Third-World interest obligations increase by $3 billion to $5 billion for every percentage-point rise in U.S. rates. At the same time, however, the rising dollar exchange rates that accompany rises in U.S. interest rates encourage these countries' exports to the United States, on which they depend heavily for foreign exchange with which to pay their debts. Rapid economic expansion in this country has added further to the demand for their products. Nevertheless, nigh interest rates divert foreign exchange into interest payments, and have forced many countries to limit their imports from the United States, thus adding to U.S. trade problems.

## CONCLUSION

The economic outlook for 1984 and 1985 is bright despite high interest rates and despite several risks that are being exacerbated by large budget deficits. The most important risks in the outlook include:

- Higher inflation, which could result from a sharp decline in dollar exchange rates, among other factors;
- Sudden reductions in foreign inflows of capital, which could occur if foreigners' portfolios became saturated with U.S. financial assets; and
- Financial instabilities associated with high and volatile interest rates, which could be made more serious by the sizable problem-loan portfolios of some major financial institutions.

CBO does not expect these risks to materialize during the forecast period. Nevertheless, it is important to place a high priority on reducing

federal deficits if only to curb the extraordinary growth in the cost of servicing the debt. Rising interest costs play a major role in making future budget prospects appear so bleak. If the deficit could be reduced to the point where the debt-to-GNP ratio began to decline, debt servicing costs would fall substantially—even if interest rates remained constant. What is now a major part of the budget problem could then be converted into a major part of the solution to our difficulties. In addition, if a falling debt-to-GNP ratio were to result in falling interest rates, it would have a further beneficial and compounding effect—making the budget problem even more tractable, and improving the potential for economic growth.

# DO FEDERAL DEFICITS REALLY MATTER?

by

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# DO FEDERAL DEFICITS REALLY MATTER?

James R. Barth, George Iden, and Frank S. Russek */

There is currently widespread concern about the effects of federal deficits on economic activity. The general consensus is that unless corrective action is taken the huge deficits now projected by almost all forecasters will force up interest rates and thereby crowd out business capital spending. If so, future generations will be confronted with a smaller capital stock and thus with a lower level of output than otherwise would be the case. To prevent this lowering of future living standards, it is widely argued that steps must be taken to reduce the federal budgetary gap.

Until recently, this view--at least about the long run effects of large deficits--would have been accepted by nearly all economists. But this conventional view of the adverse effects caused by federal deficits has come under theoretical challenge, especially within the last few years. Moreover, many recent empirical studies have been unable to find a statistically significant and positive relationship between federal deficits and interest rates. These theoretical and empirical challenges to the conventional view are especially important because public interest in this

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issue is quite high because of the size of the deficits now projected.

The purpose of this paper is to review the competing views regarding interest rate and other economic effects of federal deficits and to discusss the findings of several empirical studies that have analyzed these relationships. The main points of the discussion are that: (a) the concept of the deficit is ambiguous because not all deficits have the same economic effects, (b) testing for the economic effects of deficits is much more difficult than generally realized, and (c) by slightly modifying existing studies one is able to produce empirical evidence showing that deficits or debt do indeed affect economic activity in ways consistent with the conventional view. 1/ Rather than resolving the controversy over the economic effects of federal deficits, however, the additional evidence presented here only underscores the complexity of the entire issue. An important reason is that the empirical results vary substantially, depending on such factors as the time period that is chosen and the specific measure of the deficit or debt that is employed.

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1/ As will be discussed below, one should distinguish between the flow variable--federal deficit--and the stock variable--federal debt--when assessing the impact of the federal budget on economic activity. This distinction is especially important when these two variables move in opposite directions as is now projected by many forecasters.

## I. ALTERNATIVE THEORETICAL VIEWS

There are essentially two major competing views of the impact of federal deficits on interest rates. One view is that deficits force up interest rates; the other view is that they do not. To understand this difference in views, it is useful to review briefly the microeconomic theory underlying the standard life-cycle model. As this model is conventionally presented, economic agents are assumed to derive utility from consumption and leisure, and to maximize their life-time utility with respect to these variables subject to a given production technology and initial resource endowments. Once this is done, consumption is found to depend positively upon permanent income. 2/

Now introduce taxes and consider what happens when they are cut. 3/ Since permanent disposable income increases, consumption also increases. As a result, interest rates rise and investment spending declines. In this particular case, a deficit produces the adverse economic effects predicted by the conventional view. These effects reflect a presumed increase in permanent disposable income stemming not only from lower taxes, but also from an increase in federal debt which is assumed to be a

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2/ If the goal is a smooth consumption path, saving and dissaving become ways to respond to temporary deviations of actual income from permanent income. As will be seen below, saving and dissaving may also be viewed as ways of engaging in intergenerational transfers to neutralize certain governmental actions.

3/ Assume that these tax cuts are of the lump-sum variety and that government purchases are held constant.

component of private wealth. 4/

According to the Ricardian Equivalence Theorem as developed by Robert Barro, the above scenario is incorrect. 5/ The basic reason is that this theorem maintains that an increase in government debt is equivalent to a future increase in taxes, and thus is not an addition to the stock of private wealth. To understand the rationale for this view, one must modify the asssumptions underlying the standard life-cycle in two important ways, one involving consumer behavior and the other involving the government budget constraint. First, it is assumed that each generation derives utility not only from its own lifetime consumption, but also from that of its offspring. 6/ This assumption links together the utility functions of all generations, and implies that the current generation will adjust its saving to offset fiscal actions that have effects beyond its own lifetime. Second, it is assumed that the present value of government spending equals the present value of taxes. This intertemporal budget constraint imposes a constraint on the growth of government debt--securities issued in the current period to finance a deficit are matched by future taxes to service and repay the debt.

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4/ If debt is a component of private wealth, then the interest payments on this debt represent a component of permanent disposable income. Also, throughout this discussion, we ignore the fact that taxes are levied on the interest payments.

5/ See Barro (1974, 1978, and 1983).

6/ The current generation need not take into account the welfare of all future generations. By simply being concerned about the next generation, the current generation will be tied to all future generations through a chain of interdependent utility functions.

Without the first assumption, a tax reduction causes the current generation to increase its consumption, thereby shifting the burden of government debt entirely onto future generations. Without the second assumption, nobody would have reason to believe that deficits are a temporary phenomenon or that government debt would not grow without limit.

Now, once again, consider what happens when taxes are lowered. In this case, there will not be a perceived increase in permanent disposable income, because the tax cut is not permanent. Moreover, debt that is issued does not add to the stock of private wealth, because it is offset by a future tax liability--an outcome which is a consequence of the intertemporal government budget constraint. If the current generation were to increase its consumption when taxes are reduced, future generations would inherit both higher taxes and a smaller capital stock, each of which implies less future consumption. This outcome is avoided, however, so long as economic agents treat the tax cut as temporary and take into account the utility of their heirs. If so, the current generation will save more to increase its bequests so that its heirs can pay the higher future taxes needed to service and retire the debt without having to curtail consumption. As a result, interest rates remain unchanged, and crowding out does not occur. 7/

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7/ Since the discounted value of the future taxes needed to service and retire the debt is simply equal to the deficit, saving will increase by the size of the deficit. Private saving therefore completely offsets public dissaving.

## II. COMMENTS AND QUALIFICATIONS

Some additional comments may help to clarify the scope and limitations of the debt-neutrality theorem. First, this theorem applies to debt-financed decreases in taxes or increases in transfers, but not to debt-financed increases in government purchases. 8/ Thus, the theorem does not rule out an increase in interest rates due to an increase in debt-financed government purchases. Such a relationship would exist unless government purchases are a perfect substitute for private consumption.

Second, the debt-neutrality theorem assumes that tax changes are of the lump-sum variety. Thus, it does not rule out macroeconomic effects due to changes in tax rates. Any fiscal action that alters relative prices has the potential to change work-leisure choices and capital stock decisions. Of course, this also is true in more conventional economic models. The importance of this point, however, is that only certain types of deficits--those that result from lump-sum changes in taxes or transfer payments--fail

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8/ The debt-neturality view also makes other assumptions (such as assuming perfect capital markets--i.e., governments and the public borrow freely at the same rate, perfect foresight, and the economy is closed). Our purpose, however, is not to discuss all these assumptions but rather to indicate aspects of this view that suggest a particular empirical specification or interpretation of empirical results. Many economists question these assumptions, of course, but we prefer to concentrate on the empirical evidence pertaining to the validity of the neutrality or non-neutrality views. One final point is that even if the neutrality view is not 100 percent correct but only 50 percent correct, it still has important implications for assessing the effects of government budget policies. As regards the economic effects of government purchases, see Barro (1981), and as regards the economic effects of unanticipated deficits, see Barro, (1980).

to generate real economic effects, according to the debt-neutrality theorem.

Third, the theorem has implications for the economic effects of unfunded government liabilities--such as those associated with the social security system, even though these unfunded liabilities are not reflected in the government deficit as typically measured. Some economists have argued that the pay-as-you-go nature of the social security system has led to more consumption (less saving) than would otherwise have occurred. 9/According to the debt-neutrality theorem, however, consumption is unaffected by the existence of unfunded government liabilities. The reason is that older persons will increase their savings by enough to enable their heirs to pay the higher future taxes required to finance the system so that their consumption need not be reduced.

Finally, the debt-neutrality proposition assumes away the possibility of structural or permanent deficits that cause federal debt to grow without limit (relative to national income in an expanding economy). 10/ Most economists would agree that such deficits produce adverse effects either by

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9/ See, for example, Feldstein (1982).

10/ We are referring here to primary deficits and a situation in which the rate of interest exceeds the growth rate in output (see McCallum (1984) and Sargent and Wallace (1981) for a more detailed discussion of these issues). It is important to note in this regard that if the rate of interest is less than the growth rate in output (a situation which Barro admits he "cannot rigorously rule out"), then "debt issue would be regarded as net wealth and would therefore raise aggregate demand" (see Barro (1976, pp. 344-345)). See Darby (1984) for a recent and interesting discussion of this entire issue.

increasing the likelihood that the government will default on its debt or by causing the monetary authority to monetize deficits. If such a situation were to develop, it would negate a basic assumption of the debt-neutrality theorem. 11/

## III. TESTING FOR THE ECONOMIC EFFECTS OF DEFICITS

Not surprisingly, there has been a recent surge in the number of empirical studies examining the effects of federal deficits or debt on various measures of economic activity, including interest rates, consumption, and aggregate demand. In an attempt to put these studies into perspective, the following simple macroeconomic model will be used:

(1) $Y = C + I + G$ (goods market equilibrium condition)

(2) $C = b_0 + b_1\ Yd + b_2\ W - b_3\ G$ (consumption function)

(3) $Yd = Y - Tx + Tr + Gint$ (definition of disposable income)

(4) $I = c_0 - c_1\ (R - P^e)$ (investment function)

(5) $\frac{M^d}{P} = a_0 + a_1\ Y - a_2\ R + a_3\ W$ (money demand function)

(6) $M^s = e_0 H$ (money supply function)

(7) $M^d = M^s$ (money market equilibrium condition)

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11/ Although the debt-neutrality theorem does not rule out the existence of debt, it does not provide a rationale for its existence. For a discussion of why debt may be viewed as a close substitute for money, see Miller (1983). Also, see Cohen and McMenamin (1978) and Friedman (1978) for a general treatment of the issue of substitutability among financial assets.

where (in constant dollars) Y is net national product, C is consumption, G is federal purchases, I is investment, Yd is disposable income, W is private wealth (which consists of the capital stock, the monetary base and federal debt), Tx is federal taxes, Tr is federal transfers, Gint is federal interest payments, R is the nominal interest rate, $P^e$ is the expected inflation rate, M is the nominal money stock, P is the price level, and H is the nominal stock of high-powered money. 12/ Solving this model for the equilibrium value of the nominal interest rate, R, yields

(8) $R = f_0 - f_1 (H/P) + f_2 W + f_3 G + f_4 Tr + f_5 Gint - f_6 Tx + f_7 P^e$

or

(9) $R = g_0 - g_1 (H/P) + g_2 NW + g_3 B + g_4 D + g_5 G + g_6 P^e,$

where NW is private wealth net of federal debt, B is federal debt, and D is the federal deficit (which equals G + Tr + Gint - Tx). Clearly, equation (9) is obtained only by imposing restrictions on the original parameters in the basic model. But it does indicate that both federal deficits and debt may simultaneously affect interest rates. As will be seen below, most empirical studies of interest rates are modifications of this basic equation. 13/

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12/ The money demand equation could be modified to include Yd or Y net of G. Also, one could include retained earnings in the definition of disposable income and the real interest rate in the consumption function. Lastly, the fiscal variables could be defined to include state and local governments.

13/ Frequently an income or unemployment rate variable is included in an attempt to control for the simultaneous effect of the business cycle on the deficit and interest rate.

Before turning to the empirical studies, a few comments are in order. First, it should be clear that the consumption function plays a very important role in distinguishing between the two competing theoretical views of the impact of deficits on interest rates. More specifically, combining equations (2) and (3), one obtains

$$(10) \qquad C = h_0 + h_1 Y + h_2 G + h_3 Tr + h_4 Gint - h_5 Tx + h_6 NW + h_7 B$$

or

$$(11) \qquad C = i_0 + i_1 Y + i_2 NW + i_3 G + i_4 D + i_5 B,$$

where once again constraints have been placed on the parameters in equation (10) to obtain equation (11). 14/ According to the debt-neutrality proposition, $h_3 = h_4 = h_5 = h_7 = 0$. According to the more conventional view, on the other hand, $h_3$, $h_4$, $h_5$, and $h_7$ are all positive. If G substitutes perfectly for C, then $h_2 = -1$; if there is no substitution, then $h_2 = 0$. 15/ In terms of equation (11), the conventional view implies that $i_3 + i_4 = 0$, $i_4 > 0$, and $i_5 > 0$, whereas the debt-neutrality view implies that $i_4 = i_5 = 0$ and $i_3 + i_4 < 0$.

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14/ It should be noted that all of the right-hand side variables in the consumption function are essentially operating as surrogates for permanent disposable income.

15/ It should be noted that the debt-neutrality theorem per se does not assign a value to the coefficient $h_2$.

Second, the money demand function given by equation (5) assumes that both income and wealth raise money demand. This requires that money is demanded both as a store of wealth and for transactions purposes, or that wealth provides additional information about the unobserved transactions variable. The conventional view implies that the coefficient on federal debt is positive, since such debt is assumed to be a component of wealth. The debt-neutrality view, on the other hand, implies that the coefficient on federal debt is zero.

Further, notice that the stock of federal debt affects the level of interest rates through the demand for money, but the flow of federal debt does not. Thus, there may be some merit to the view that the stock of federal debt is more important for the level of interest rates than the flow of new debt within the confines of the more conventional view. 15/ More specifically, since the coefficient on the stock of federal debt in an interest rate equation represents both the effect of the stock of debt on the level of rates and the effect of the flow of debt on the change in rates, a relatively small coefficient can simultaneously imply a relatively high level of interest rates due to a large stock of outstanding federal debt and a relatively minorncrease in rates due to what many may view as a big federal deficit. Also, regardless of the size of this coefficient, projections of declining deficits and rising debt may imply successively smaller increases in rates but nonetheless continuing high levels of interest. This implication,

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15/ See Brunner (1984).

however, is based upon only the flow of new federal debt effect of deficits. Any change in government purchases or taxes associated with the deficits may produce separate interest rate effects resulting from changes in the transactions demand for money. One must therefore be careful to distinguish between effects on interest rate due to transactions effects and those due to portfolio or wealth effects. The apparent confusion over the differential effects of deficits versus debt on interest rates may be due to the failure to consider the effects of the flow of new debt separately from the transactions effects of government purchases and taxes. 16/

Third, no allowance has been made for temporary versus permanent government spending, anticipated versus unanticipated movements in money, government consumption versus government investment, and international factors. Furthermore, the supply-side of the economy has been ignored in our simple model, although it is not clear that its inclusion would alter the basic results. 17/

Lastly, it is important to realize that many of the tests of the economic effects of federal deficits or debt, to the extent that their discriminatory power is at all very high, may involve joint instead of

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16/ In the competing view, federal debt does not belong in either the consumption or money demand equations so these interest rate effects are nonexistent. Of course, the relative interest rate effects of the stock of debt, the flow of new debt, and government purchases and taxes is ultimately an empirical issue.

17/ However, see Auerbach (1976 and undated) for an interesting discussion of the economic effects of deficits when the supply-side of the economy is incorporated.

separate tests of the significance of parameters. 18/ As an illustration, consider the simple interest rate equation:

(12) $R = a + b\ D$ .

This equation may be rewritten as

(13) $R = a + bG - bTx$,

where we abstract from transfers and interest payments. Clearly, the estimated coefficients on the tax and purchase variables in this equation cannot be equal in magnitude while satisfing both the conventional and debt neutrality views, since they assign different values to these two coefficients. If one includes the deficit variable rather than Tx and G separately, then one should probably also include G (or Tx) to capture differences in coefficients. That is, one should consider estimating an equation like:

(14) $R = a + b\ D + cG$ .

In this case, the partial effect of taxes on the interest rate is -b, while the partial effect of federal purchases on the interest rate is b + c. 19/ This example illustrates that one must be careful in formulating tests of competing views about deficits and interest rates. 20/

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18/ The cross-equation restrictions on parameters discussed above may be tested.

19/ See Buiter and Tobin (1980), who include taxes separately from the deficit when testing the debt-neutrality theorem with a consumption function.

20/ According to the conventional view, $b > o$ and $b + c > o$. In contrast, the debt-neutrality view implies $b = o$ and $b + c = o$. Note that $b + c > o$ is consistent with a zero coefficient on G in a consumption function, while $b + c = o$ is consistent with a coefficient of -1 for G in a consumption function.

## IV. AN ANALYSIS OF SELECTED EMPIRICAL STUDIES

As the above discussion has suggested, there are various ways in which one can empirically attempt to assess the impact of federal deficits or debt on economic activity. One could examine either "structural" relationships (such as a consumption function or a demand for money equation) or "reduced form" interest rate and aggregate demand relationships. Most public attention has focused on the interest rate-deficit connection, and there are a number of recent empirical studies which statistically test this relationship. The Congressional Budget Office (1984) surveyed 24 of these studies and found that they differed widely in terms of time period, data frequency, statistical technique, type of interest rate variable, independent variables, and definition of the deficit or debt variable. The general finding was that the government debt variable tended to be more significant than the deficit variable, but that neither fiscal variable was consistently positive and significant in all interest rate studies.

In this section we examine a few of these interest rate studies, a recent and important consumption study, a money demand study, and an aggregate demand study. Our purpose in examining these studies is to determine how sensitive the original findings are to various modifications, all of which we consider reasonable alternatives. Our intention is not to resolve the controversy over the interest rate effect of federal deficits or debt. But we do hope to raise substantive questions about some of the claims concerning this relationship, particularly the claims that there is

overwhelming evidence that deficits do not affect interest rates, and that significant interest rate effects, even if they do exist, cannot be detected with single equation models. 21/

Interest Rate Studies. In this subsection we consider four interest rate studies. The first study is by Hoelscher (1983), in which the 3-month Treasury bill rate was regressed on the federal deficit (not the level of federal debt), the unemployment rate, expected inflation, and the monetary base. This specification differs from equation (9) mainly in that it excludes federal purchases and the stock of federal debt and includes the unemployment rate. Hoelscher found the deficit variable to have a positive but insignificant coefficient. We obtained the same findings both when we replicated his study and when we updated it through the end of 1983 (see Table 1). However, when we took account of the effect of the business cycle on the deficit variable by decomposing the deficit into its structural and cyclical components rather than by leaving it unadjusted and simply adding the unemployment rate, the results changed. 22/ In particular, the

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21/ Some argue that only multiple-equation models can capture the effects of federal deficits. In particular, some argue that unless one endogenizes the monetary base through the inclusion of a reaction function, one will be unable to detect any significant deficit effect on interest rates. However, if one can find such an effect using a single equation, presumably the effect would be even larger if the monetary base were so endogenized. For an analysis of monetary reaction functions, see Abrams, Froyen and Waud (1982), Barth, Sickles, and Wiest (1982), Beck (1983), Bradley (1984), and Levy (1981). Lombra (1984) provides an interesting and more general discussion of the stated versus actual behavior of the monetary authority.

22/ The procedure used to decompose the deficit was essentially that used by de Leeuw and Holloway (1983).

Table 1
Federal Deficits, Federal Debt, and Interest Rates: Analysis of Selected Empirical Studies

| Independent Variable | Hoelscher (1983) (1) Original | Hoelscher (1983) (2) Structural vs. Cyclical Deficits | Carlson (1983) (3) Original | Carlson (1983) (4) Replication | Carlson (1983) (5) Update | Girola (1984) (6) Original | Girola (1984) (7) Serial Correlation Correction | Girola (1984) (8) Foreign vs. Domestic Debt | de Leeuw & Holloway (19 (7) Original | de Leeuw & Holloway (19 (8) Federa Governm Purcha |
|---|---|---|---|---|---|---|---|---|---|---|
| Intercept | 2.35<br>(6.32) | 0.58<br>(3.54) | -26.11<br>(2.78) | -27.80<br>(2.82) | -33.92<br>(3.40) | -70.69<br>(2.70) | -12.00<br>(1.00) | -33.28<br>(2.89) | 10.5<br>(3.5) | 6.95<br>(1.96 |
| $\pi^e$ | 0.31<br>(3.48) | 0.17<br>(3.45) | | | | | | | | |
| UNEM | -0.26<br>(3.13) | | | | | | | | | |
| DEFICIT | 0.006<br>(1.02) | | | | | | | | | |
| $\dot{M}$ | -0.03<br>(2.16) | -0.09<br>(4.22) | | | | | | | | |
| $TBILL_{-1}$ | 0.63<br>(6.82) | 0.84<br>(19.06) | | | | | | | | |
| SDEFICIT | | 0.010<br>(2.21) | | | | | | | | |
| CDEFICIT | | -0.03<br>(0.16) | | | | | | | | |
| $\dot{M}^e$ | | | -8.12<br>(2.24) | -8.57<br>(2.4) | -7.96<br>(1.88) | | | | | |
| Y | | | 7.12<br>(6.67) | 7.26<br>(6.55) | 7.97<br>(6.66) | | | | | |
| DEBT | | | 1.66<br>(1.97) | 1.58<br>(1.69) | 2.37<br>(2.22) | | | | | |
| $\pi^e$ | | | 0.76<br>(6.16) | 0.73<br>(6.12) | -0.72<br>(3.32) | | | | | |
| $\Delta RAAA_{-1}$ | | | 0.12<br>(1.79) | 0.12<br>(1.75) | 0.11<br>(1.56) | | | | | |
| $\dot{M}$ | | | | | | -10.72<br>(5.83) | -6.61<br>(1.58) | -7.03<br>(1.64) | | |
| GNP | | | | | | 8.47<br>(7.13) | 7.08<br>(3.47) | 9.01<br>(6.47) | | |
| PCC | | | | | | -0.02<br>(0.36) | -0.00<br>(0.01) | 0.01<br>(0.60) | | |
| PCL | | | | | | 0.62<br>(6.94) | 0.72<br>(3.88) | 0.68<br>(3.31) | | |
| $\Delta RAAA_{-1}$ | | | | | | 0.40<br>(1.77) | 0.13<br>(1.81) | 0.11<br>(1.50) | | |
| TDEBT | | | | | | 3.06<br>(3.33) | -0.13<br>(0.10) | | | |
| DDEBT | | | | | | | | 2.70<br>(2.07) | | |
| FDEBT | | | | | | | | -0.56<br>(1.19) | | |
| $\dot{M}^e$ | | | | | | | | | -3.2<br>(6.6) | -3.18<br>(7.03 |
| SDEBT | | | | | | | | | 0.63<br>(6.3) | 0.61<br>(6.43 |
| $\pi^e$ | | | | | | | | | 1.02<br>(3.1) | 1.16<br>(5.26 |
| GP | | | | | | | | | | 0.39<br>(1.99 |
| $DW^2$ | .93 | .957 | .989 | .989 | .987 | .94 | .94 | .99 | .928 | .933 |
| DW | N.A. | 2.01 | 1.95 | 1.93 | 1.91 | 0.26 | 1.93 | 1.86 | 1.2 | 2.11 |
| SER | 0.30 | 0.80 | 0.33 | 0.33 | 0.33 | 0.78 | 0.33 | 0.35 | 0.83 | 0.65 |

Notes: The dependent variables are (1) nominal three-month Treasury Bill rate on new issues (Hoelscher); (2) nominal AAA corporate bond rate (both Carlson and Girola); (3) nominal rate on three-year constant maturity Treasury securities (de Leeuw and Holloway). The original sample periods are: 1952:3–1976:2 (Hoelscher); 195 1983:2 (Carlson); 1954:1–1983:2 (Girola); and 1956–1982 (de Leeuw and Holloway).

## Glossary for Table 1

| Variable | | Definition |
|---|---|---|
| pe | = | expected inflation, annual rate, based on Livingston's survey data for expectations over next 6 months |
| UNEM | = | unemployment rate, quarterly average of seasonally-adjusted monthly data |
| DEFICIT | = | total federal borrowing, flow-of-funds data, constant dollars |
| M | = | net acquisition of credit market instruments by the Federal Reserve System, in constant dollars, average of current and preceeding quarters, flow-of-funds data |
| $TBILL_{-1}$ | = | 3-month Treasury bill rate, new issues, quarterly average of monthly data, lagged one quarter |
| SDEFICIT | = | structural component of DEFICIT, CBO calculation, constant dollars |
| CDEFICIT | = | cyclical component of DEFICIT, CBO calculation, constant dollars |
| M' | = | monetary base, constant dollars, per capita |
| Y | = | GNP, constant dollars, per capita |
| DEBT | = | privately held federal debt (excluding foreign holdings), constant dollars, per capita |
| pe' | = | expected inflation, annual rate, DRI calculation based on PCE deflator |
| $\Delta RAAA_{-1}$ | = | Aaa corporate bond rate, quarterly change, lagged one quarter |
| MB | = | logarithm of the monetary base, constant dollars, per capita |
| GNP | = | logarithm of GNP minus GNP produced in the government sector, constant dollars, per capita |
| PCC | = | percent change in deflator for personal consumption expenditures |
| PCL | = | three-quarter distributed lag on PCC lagged one quarter |
| TDEBT | = | logarithm of privately held federal debt |
| DDEBT | = | domestically-held component of TDEBT |
| FDEBT | = | foreign-held component of TDEBT |
| M" | = | monetary base, divided by cyclically-adjusted GNP |
| SDEBT | = | structural (cyclically-adjusted) component of federal debt divided by cyclically-adjusted GNP |
| pe" | = | expected inflation, calculated as distributed lag of past percent changes in the implicit GNP deflator |
| GP | = | federal government purchases of goods and services, NIPA basis, divided by cyclically-adjusted GNP |

structural deficit had a significant and positive coefficient, while the cyclical deficit had a significant but negative coefficient, undoubtedly reflecting the simultaneous response of the interest rate and the deficit to the business cycle. This finding suggests not only that it is important to control for the effects of the business cycle, but also that the results are sensitive to how this is done.

The second study we examined was by Carlson (1983). Instead of including the federal deficit as a regressor, the Aaa corporate bond rate was regressed on privately-held federal debt (excluding foreign holdings), expected inflation, GNP, and the monetary base. The regression covered the 1953:2-1983:2 period and an adjustment for first-order serial correlation was made. Carlson's specification differs from equation (9) mainly by including GNP and by excluding federal purchases and the federal deficit. The originally reported results indicated a positive and significant coefficient for the debt variable. However, our efforts to replicate this result were unsuccessful--although we obtained a positive coefficient for domestically held federal debt, it was not statistically significant (see Table 1). But when we changed the sample period to 1955:1-1983:4, the debt coefficient became significant at a higher level of conficence than originally reported by Carlson. This finding illustrates that even a modest change in the sample period can affect conclusions about the impact of federal debt on interest rates.

The third study we examined was by Girola (1984). As an initial step, Girola reported an effort to update the work of Feldstein and Eckstein (1970). The Aaa corporate bond rate was regressed on privately held federal debt, expected inflation, the monetary base, and an income variable. This specification mainly differs from equation (9) by including an income variable and by excluding federal purchases and the federal deficit. Although Girola estimated many other equations, including his own preferred specification, we have initially concentrated on his updated estimation of the original Feldstein and Eckstein interest rate equation. When updating this equation we obtained essentially the same results as obtained by Girola, namely that debt has a positive and highly significant effect on interest rates. However, as Girola notes, the Durbin-Watson statistic is extremely low. Although Girola did not correct for first-order serial correlation, we did and found that the coefficient on debt became insignificant and negative (see Table 1). However, when we broke the debt variable down into two separate components--domestically-held federal debt and foreign-held federal debt--and continued to correct for first-order serial correlation, we found that the coefficient on domestically held debt became significantly positive, while the coefficient on foreign-held debt was not significant, although it did have a negative sign as might be expected. These findings demonstrate the sensitivity of conclusions to statistical technique and to the measurement of the debt variable.

The last interest rate study we examined was by deLeeuw and Holloway (1983). In this study, the interest rate on Treasury bonds maturing in 3 years was regressed on cyclically-adjusted or structural federal debt, expected inflation, and the monetary base. This specification mainly differs from equation (9) by the omission of federal purchases and the deficit. (They found the deficit to be insignificant in an alternative specification, however.) In this regression, cyclically-adjusted federal debt had a positive and highly significant coefficient (see Table 1). When we replicated and updated this study, we obtained essentially the same results, even after correcting for first- and second-order serial correlation. We decided to include federal purchases of goods and services as a separate independent variable, since the lack of an interest rate effect for the federal deficit or debt, according to the debt-neutrality view, is predicated on federal purchases being held constant. Including this variable in the de Leeuw-Holloway regression left their results essentially unchanged, although the federal purchases variable had a positive and significant coefficient. 23/

Consumption Study. In a recent and important study, Kormendi (1983) analyzed the consumption impact of total (federal plus state and local) government purchases, taxes, transfers, interest payments, and the market value of total government debt. This specification coincides with equation (11). He found that government purchases have a negative and significant impact on consumption, but are less than perfect substitutes for private

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23/ Such a result would generally be expected unless federal purchases were a perfect substitute for private spending.

consumption. Although the market value of government debt also had a significant coefficient, the sign was negative—a result that Kormendi found surprising. 24/

In replicating as well as in updating these results through 1983, we obtained essentially the same findings (see Table 2). However, when we concentrated on just the 1955-83 period, two things happened. 25/ First, the coefficient on government purchases became insignificant, while the coefficient on government debt became positive though remaining insignificant. Second, when we substituted the par value of debt for the market value, the coefficient of government purchases remained insignificant, but the coefficient on debt was now not only positive but also highly significant. These changes in coefficient signs and significances are in agreement with the conventional view that increases in government debt raise interest rates. 26/

Money Demand Study. To assess the impact of federal debt on the demand for money, we employed a modified version of a money demand function recently estimated by Hafer and Hein (1984). Our purpose was

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24/ For discussions and measurements of the market value of government debt, see Butkiewicz (1983), Cox and Hirschhorn (1983), and Seater (1981).

25/ We chose this particular period because (although not used here) 1955 is the first year for which we have an estimate of the structural debt.

26/ It should be noted, however, that in our reestimates the tax variable remained insignificant, the same finding obtained by Kormendi.

Table 2
Government Spending, Government Debt, and Consumer Spending:
Analysis of Kormendi's (1983) Results
(Dependent Variable—Personal Consumption Expenditures*)

| Independent Variables | (1) Original 1931-1976 | (2) 1955-1983 | (3) 1955-1983 |
|---|---|---|---|
| Intercept | N.A. | 0.02<br>(2.2) | 0.03<br>(2.85) |
| Y | 0.29<br>(7.3) | 0.24<br>(2.2) | 0.24<br>(2.45) |
| $Y_{-1}$ | 0.07<br>(3.3) | 0.05<br>(0.71) | 0.04<br>(0.72) |
| GS | -0.23<br>(12.8) | -0.14<br>(0.88) | -0.08<br>(0.54) |
| W | 0.03<br>(3.0) | 0.02<br>(1.7) | 0.02<br>(2.30) |
| TR | 0.83<br>(5.6) | 0.48<br>(1.4) | 0.52<br>(1.78) |
| TX | 0.07<br>(0.9) | 0.01<br>(0.08) | -0.04<br>(0.23) |
| RE | 0.10<br>(0.9) | -0.03<br>(0.11) | -0.11<br>(0.49) |
| GINT | 1.15<br>(1.3) | 1.3<br>(1.9) | 0.66<br>(1.05) |
| GB | -0.06<br>(2.9) | 0.05<br>(0.99) | |
| GBP | | | 0.18<br>(2.45) |
| $R^2$ | .911 | .619 | .695 |
| DW | N.A. | 1.44 | 1.30 |
| SER | 0.02 | 0.02 | 0.02 |

*Personal consumption expenditures on nondurables, services, and the service flow from the stock of consumer durables--constant dollars per capita.

## Glossary for Table 2

| Variable | | Definition |
|---|---|---|
| Y | = | net national product, constant dollars, per capita |
| GS | = | federal, state, and local government purchases of goods and services, NIPA bais, constant dollars, per capita |
| W | = | private wealth, constant dollar per capita, measured by the stock of residential plus nonresidential fixed capital plus an estimate of the stock of human capital |
| TR | = | federal, state, and local government transfers to persons, constant dollars, per capita |
| TX | = | federal, state, and local government revenues, constant dollars, per capita |
| RE | = | corporate retained earnings, constant dollars, per capita |
| GINT | = | federal, state, and local government net interest payments, constant dollars, per capita |
| GB | = | federal, state, and local government debt, market value, beginning of period, constant dollars, per capita |
| GBP | = | par value counterpart of GB |

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simply to add a federal debt variable to the money demand equation and then re-estimate the equation. Since we did not use Hafer and Hein's exact variables, there is no replication attempts to report. However, our results are qualitatively quite similar to theirs. When federal debt is added, its coefficient is both positive and highly significant. 27/ This result is consistent with the view that federal debt raises interest rates not only through its impact on consumption, but also through its impact on money demand.

Aggregate Demand Study. The last type of study we examined considers the impact of the federal deficit (not debt) on the growth rate of real GNP. 28/ Due to its recent publication date and importance, we chose the study by Eisner and Pieper (1984). The unique feature of this particular study is the extensive effort that went into measuring the market value of federal assets and liabilities. 29/ Although their measurements are very important in and of themselves, we are interested here in their empirical

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27/ The estimated equation is

$$\ln M/P = \underset{(2.39)}{-0.42} + \underset{(2.48)}{0.02} \ln RGNP - \underset{(4.97)}{0.02} \ln R + \underset{(32.41)}{1.02} \ln M/P_{-1} + \underset{(3.56)}{0.03} \ln B,$$

where M/P is real M1, RGNP is real GNP, R is the 3-month nominal rate on new Treasury bills, and B is real par value of federal debt. The results are essentially unchanged when the market value of debt is substituted for the par value.

28/ The results do not change when the unemployment rate is the dependent variable, something which the original authors did.

29/ Also, see Buiter (1983).

findings. Eisner and Pieper found that cyclically-adjusted federal deficits have a significantly positive impact on real GNP growth, even when this deficit variable is adjusted for the declines in value due to inflation. We obtained essentially the same results when we updated their study through 1983 (see Table 3). But our findings indicate that even the cyclically-unadjusted measure of the deficit has a positive and significant effect on real GNP growth. Thus, in some specifications, statistically significant economic effects of deficits can be detected without refinements of the deficit measure.

## V. ISSUES FOR FURTHER CONSIDERATION

It is important that the above empirical results be put into perspective. This may be done by realizing that it was widely reported that the empirical evidence indicates that federal deficits or debt have no significant effect on interest rates. Given the importance of this issue, a survey of some recent empirical studies pertaining to ths issue was conducted by the Congressional Budget Office (CBO). The results of this survey, reported in a CBO (1984) report, indicated that there were some empirical studies finding positive and significant interest rate effects of federal deficits or debt, although these studies were clearly outnumbered by the studies finding no statistically significant effects. 30/ These relatively

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30/ Woodward (1983b) and U.S. Treasury Department (1984) also survey and discuss the empirical evidence relating to the impact of federal deficits on interest rates. For more general discussions of the

Table 3

Federal Deficits and Real GNP Growth: Analysis of Eisner and Pieper's (1984) Results

| Specification | Deficit or Surplus Measure | 1955-1966 Intercept | 1955-1966 Federal Surplus | 1967-1981 Intercept | 1967-1981 Federal Surplus | $\bar{R}^2$ | DW | SER |
|---|---|---|---|---|---|---|---|---|
| (1) Percent Change Real GNP-Original | OF | 5.68<br>(6.11) | -1.84<br>(2.51) | 0.52<br>(0.69) | -2.90<br>(3.97) | .451 | 1.61 | N.A. |
| (1') Percent Change Real GNP-Original | PA | 7.19<br>(6.60 | -1.73<br>(3.47) | 4.43<br>(8.94) | -2.32<br>(5.28) | .595 | 2.02 | N.A. |
| | | 1955-1966 | | 1967-1983 | | | | |
| (2) Percent Change Real GNP-Actual Surplus | OF | 3.66<br>(5.70) | -1.39<br>(2.13) | 1.13<br>(1.41) | -0.91<br>(2.50) | .261 | 1.14 | 2.12 |
| (2') Percent Change Real GNP-Actual Surplus | PA | 4.78<br>(6.66) | -1.15<br>(2.47) | 2.51<br>(5.29) | -1.04<br>(3.36) | .379 | 1.24 | 1.95 |

Note: In Equations (1) and (2) the federal surplus is measured as the high-employment budget surplus. In Equations (3) and (4) the federal surplus is measured by the actual NIPA surplus. OF means official (Bureau of Economic Analyses series) and PA means price adjusted, that is OF adjusted for the decline in the value of outstanding net federal debt due to inflation.

few studies were important, however, because they indicated that not only was there some evidence consistent with the conventional view, but also that one could obtain such evidence without explicitly incorporating additional variables or equations to take account of the reactions of the monetary authority which might bias downward the effect of deficits on interest rates. Of course, this factor could be taken into account, something we have already done to a limited degree in related research efforts. But in this paper our purpose was simply to pursue the single equation approach further by examining several empirical studies bearing directly on the deficit or debt issue. To reduce the controversial nature of our empirical work, we adopted the theoretical framework and empirical specification of the original studies. On this basis, we have examined how sensitive the originial results are to such factors as the sample period, whether one includes a deficit or debt variable, and the measurement of the deficit or debt variable. Our results indicate that all of these factors do indeed seem to matter. Although we have examined only a few studies here, we suspect that similar findings would hold for other studies.

Our empirical findings do not resolve the controversy over the economic effects of federal deficits and debt. There are many issues which

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30/ (Continued)

economic effects of deficits, see Barro (1983), Cagan (1983), Miller (1983), and Woodward (1983a). At a simplier as well as historical level, see Barth and Morrell (1982).

we have not fully addressed, including the most appropriate specification of a test that discriminates between the competing theoretical views, the statistical problems resulting from endogeneity of right-hand side variables, and the choice and measurement of the variables to include in regressions.

Finally, one issue that has received relatively little attention thus far in the empirical research is the power of the statistical tests used for hypothesis testing. If the null hypothesis is that deficits have no effect on interest rates, the probability of rejecting this hypothesis when it is true can be set equal to 10 percent, 5 percent or even lower. However, this is not necessarily a very powerful test, because the probability of rejecting the null hypothesis when it is false (that is, when the alternative hypothesis that deficits do have an effect on interest rates is true) may be substantially less than one. Unfortunately, it is not always easy to determine the power of a test; but standard tests such as the t-statistic on a coefficient may lead to incorrect conclusions if these tests have a low probability of rejecting the null hypothesis when it is false. This is an especially important issue for testing the interest rate effects of deficits or debt, since so many of the studies in this area accept the null hypothesis that deficits do not affect interest rates. 31/

## VI. CONCLUSIONS

The current deficit situation has generated tremendous concern about what is going to happen to interest rates as well as economic activity more

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31/ For an excellent discussion of this and related issues, see Swamy, Conway and von zur Muehlen (1984).

generally during the coming months and years if corrective budgetary action is not undertaken sometime soon. This paper has reviewed two major competing views on the interest rate-deficit connection. One view suggests that there is a significantly positive relationship between interest rates and deficits, while the other denies the existence of any such relationship. However, it was also pointed out that even the non-conventional view maintains that only a special type of deficit would not raise interest rates—namely, one resulting from a lump-sum cut in taxes (or increase in transfers). Deficits resulting from increases in government purchases, on the other hand, would force rates up as conventional theory suggests, unless such purchases were perfect substitutes for private consumption.

We also attempted to put empirical studies into perspective through the use of a simple macroeconomic model. This approach revealed differences between the economic effects of federal deficits and federal debt, and highlighted the key role played by the consumption function. It also illustrated some of the potential problems that can arise when testing for the economic effects of federal deficits or debt, and clarified some of the differences in specifications of empirical studies.

The final part of our paper examined several recent empirical studies. By making fairly noncontroversial modifications to these studies, we were able to show that deficits or debt do indeed affect interest rates, consumption, money demand, and aggregate demand in ways consistent with the conventional view. However, our findings do not resolve the

controversy. Instead, they point out that one should be very careful when interpreting and assessing the empirical evidence about the economic effects of federal deficits or debt. An important reason is that empirical results appear to be quite sensitive to the time period examined, the choice of dependent and independent variables, and the measurement of the deficit or debt variables. Clearly, much more empirical work remains to be done on this crucial public policy issue.

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# THE EFFECTS OF CHANGES IN INTEREST RATES ON DIFFERENT SECTORS OF THE U.S. ECONOMY

Staff Memorandum

June 1984

The Congress of the United States
Congressional Budget Office

A study prepared by Frederick Ribe of CBO's Fiscal Analysis Division (Telephone: 226-2769) in response to a request from the Senate Budget Committee.

## SUMMARY

To assess the implications of today's relatively high interest rates, this memorandum reviews the experience of two decades in different sectors of the U.S. economy. Though interest-rate changes can produce many effects--involving saving, investment, exports, and other developments--the Congressional Budget Office has focused in this study on only one: the effects on investment spending in different sectors. One can develop simple rules for predicting the sectoral spending changes that can result from a given change in interest rates. The results of CBO's analysis (shown in Table 1 in the text) must be regarded as highly uncertain, but they suggest that housing is most sensitive to interest rates, followed by nonresidential structures, producers' equipment, and consumer automobiles in that order.

Literature reviewed for the paper suggests that business investment is influenced most strongly by real after-tax interest rates, while consumer investment is affected by all interest-rate changes, whether real or purely nominal. In all cases, however, the effects are indirect; the direct effects of rates are reflected in a measure known as the "rental price" of capital. This measure takes account of all factors affecting the cost of investment. Such factors include tax policy, relative asset prices, and physical depreciation, as well as interest rates themselves.

Because certain of these other provisions cushion the impacts of high interest rates, the current rental prices for certain sectors stand at moderate or even low levels by historical standards, as Figure 1 in the text shows. In particular, the rental price for producers' durable equipment is low by recent historical standards, and that for consumer automobiles is only slightly above its average levels of the 1960s and 1970s. By contrast, quite high rental prices now characterize the housing, nonresidential structures, residential structures, and state and local construction sectors.

A graphic presentation in Figures 2 through 4 separates changes in rental-price measures into those parts caused directly by changes in interest rates, tax policy, and other factors. (There may be interactions among these factors, if, for example, a tax cut helps raise interest rates; but CBO has disregarded these indirect effects in this analysis.) The CBO analysis shows that, in recent years, tax policy and relative prices have overcome the effects of rising interest rates, and these factors have steadily reduced the rental price for producers' equipment. The price for all types of structures, by contrast, has followed the upward course of interest rates.

## THE EFFECTS OF CHANGES IN INTEREST RATES ON DIFFERENT SECTORS OF THE U.S. ECONOMY

This brief study responds to three questions about the economic effects of current interest-rate levels:

- Which measures of interest rates (real? nominal? after-tax?) affect different sectors of the U.S. economy most directly?
- How do current levels of these measures compare to those at comparable stages of previous recoveries?
- What are the estimated effects of changes in these rate measures on different U.S. economic sectors?

The discussion is restricted to investment effects and covers four sectors of the domestic economy: business investment in producers' durable equipment, nonresidential structures, and residential structures; investment by households in owner-occupied housing and automobiles; and construction by state and local governments.

The first section briefly describes the findings of the literature on how interest rates affect different sectors. In general, the CBO finds that an overall measure of capital costs--the rental price on capital--is the most direct interest-rate-related determinant of spending in each sector. This measure includes interest costs as well as physical depreciation, the relative prices of capital goods, and various tax provisions.

The second section presents current data on these rental price measures, as well as some perspective on how these measures' current levels compare to those of prior post-War recoveries. Changes in the rental-price measures are broken down into four groups: those components caused by interest-rate changes, those resulting from changes in tax provisions, those following from changes in relative goods prices, and those linked to changes in inflation.

A final section draws evidence from the literature on the responsiveness of spending in each sector to changes in its rental price and in the underlying interest rates.

## ECONOMIC EFFECTS OF INTEREST RATE CHANGES

Changes in interest rates may affect the economy in several ways. For example, such changes have strong effects on investment spending decisions in different sectors. Rate increases can also raise the domestic saving rate, and if domestic rates are not matched by rates abroad or by expected exchange-rate developments, they can attract larger inflows of savings from other countries. Such capital inflows can in turn affect exchange rates and the levels of export and import activity.

This study deals with only the first of these effects--the impacts of interest rates on investment decisions. Most evidence suggests that these effects are much stronger than those on domestic savings flows. Though the impacts of interest rates on foreign capital inflows--and hence, on net exports--can be quite strong, they are especially difficult to measure. One must take into account the reactions of foreign interest rates and of expectations about exchange-rate developments, together with the responses of current exchange rates and of demands in other countries for U.S. exports. This problem is complex and has yet to be quantified adequately. Thus with its focus on investment spending impacts, this study considers some but not all of the important effects of interest-rate changes.

## EFFECTS OF INTEREST RATES ON INVESTMENT DECISIONS

Seldom does economic theory suggest that either nominal or real interest rates in themselves exert a direct effect on the level of spending. Rather, interest costs are grouped with several other cost elements such as physical depreciation, relative prices of actual investment goods, and various tax provisions. All these factors interact to determine the marginal costs of investment in a measure termed the rental price of capital. 1/

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1/ The original formulation of the rental price, applied to business investment, is in Hall and Jorgenson (1967). More recent treatments include Clark (1979), and Chirinko and Eisner (1981). The rental price measures for owner-occupied and rental housing are discussed in detail in Rosen and Rosen (1980) and in Hendershott and Shilling (1980), and their empirical importance is developed in Hendershott (1980). The rental price is used to analyze spending on other consumer durables in Mishkin (1976). An alternative approach related to the rental-price analysis is 'q theory'; see Abel (1980), Clark (1979), and Summers (1981). References are given in full at the back of this memorandum.

In most formulations of the rental price for business investment, the particular interest-rate measure that enters the calculation is the real rate before personal taxes but after corporate taxes. 2/ Nominal before-tax rate changes also affect business investment through their role in discounting tax deductions for depreciation and the tax deductibility of nominal interest, but their influence is much less strong than those of real rates, as the discussion below shows. For consumer investments such as housing and consumer durables, by contrast, statistical studies suggest overwhelmingly that nominal, rather than real, rates determine spending decisions. 3/ Thus the following discussion develops measures of the rental price of capital based on estimated real interest rates for business investment and on nominal rates for consumer investment.

## CURRENT LEVELS OF RENTAL PRICES AND THEIR CAUSES

Figure 1 shows rental prices for each of the sectors described above over the 1962-1983 period, together with the underlying measures of real and nominal interest rates. The computer routine with which the figures were calculated is described briefly in the appendix. All rental prices in Figure 1 are indexed to their 1962 values; periods of economic recession are set off in bands.

In the calculations of real interest rates, inflationary expectations are represented as a function of past inflation rates only. Since the assets treated here are assumed to be held indefinitely by their initial purchasers, a long-term inflation forecast is needed. An implicit long-term inflation

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2/ Chirinko and King (1981) and others argue for the after-personal-tax real rate, but this is not yet a widely held view.

3/ Jaffee and Rosen (1979) and most studies surveyed in Kearl, Rosen, and Swan (1975) find that nominal rather than real mortgage rates perform well in equations explaining housing. Mishkin (1976) finds that a rental-price measure based on a nominal rather than a real pre-tax interest rate does better than the real-rate-based measure in explaining purchases of other durables. Most investigators attribute this result to cash-flow constraints faced by households, variations in uncertainty associated with changes in inflation, and to other factors.

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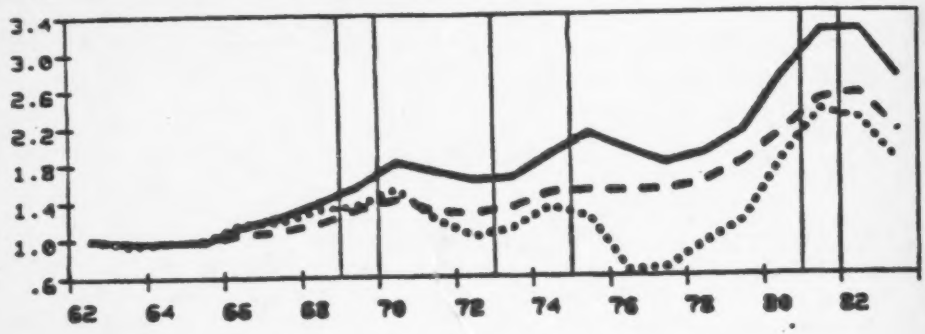
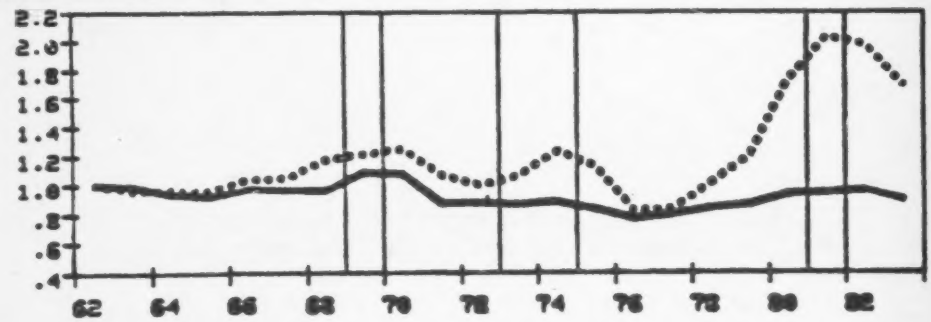
FIGURE 1. INTEREST RATES AND RENTAL PRICES ON DIFFERENT INVESTMENTS, 1962-1983 (Ratio to 1962 Level)

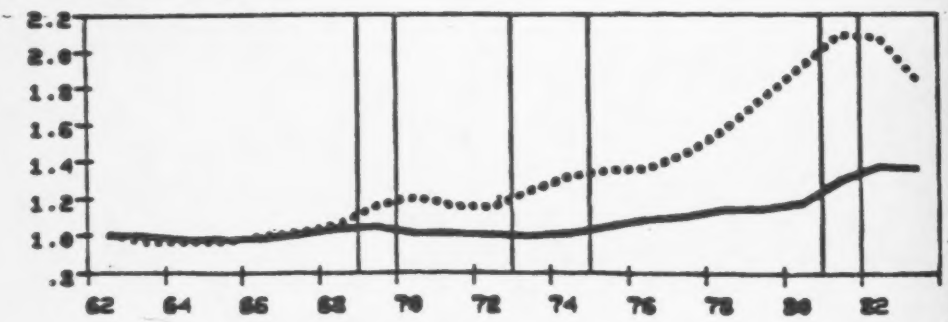
Interest Rates
Moody's BAA Corporate Bond Rate, Nominal (line)
Moody's BAA Corporate Bond Rate, Real (dot)
Mortgage Commitment Rate, Nominal (dash)




Rental Prices
Producers' Durable Equipment (line)
Nonresidential Structures (dot)




Consumer Automobiles (line)
Owner-Occupied Housing (dot)



forecast is derived from an estimated equation designed to forecast only one year ahead using a method presented by Modigliani and Shiller (1973). 4/

As the top panel of Figure 1 shows, interest rates—both real and nominal—are quite high by recent historical standards. Certain of the rental-price measures are correspondingly high, including those for owner-occupied housing (bottom panel), nonresidential structures (middle panel), and both residential structures and state and local construction (not shown; these follow patterns quite similar to that of nonresidential structures). By contrast, the rental price for consumer automobiles (bottom panel) is only moderately high, and the price for producers' durable equipment (middle panel) is low by recent standards.

Several factors together explain why rental prices for automobiles and producers' equipment are now lower relative to those in the recent past than are the prices for various structures. Because these assets have shorter lives, their depreciation rates are higher, so a particular increase in interest rates causes a smaller percentage increase in the overall cost than for an asset with a lower depreciation rate, such as structures. In the case of producers' equipment, moreover, the downward trend in the rental price reflects the effects of federal tax policy and the behavior of the relative prices of equipment goods themselves.

The roles of relative asset prices, real interest rates, and other factors in changing the rental price of capital are illuminated more precisely in Figures 2 through 4. Figure 2 breaks down the changes in the price for producers' durable equipment since 1962 into components caused directly by changes in relative asset prices, real interest rates, inflationary expectations, and federal tax policy. These components are calculated using a linear approximation to the rental price. (The CBO rental-price model is described in the appendix. Other methods of making such "decompositions" exist, and they might give different results.)

The downward trend in the rental price over this period is caused by the relative price of producers' equipment goods, whose contribution is shown in the second panel, and by tax policy, shown in the bottom panel.

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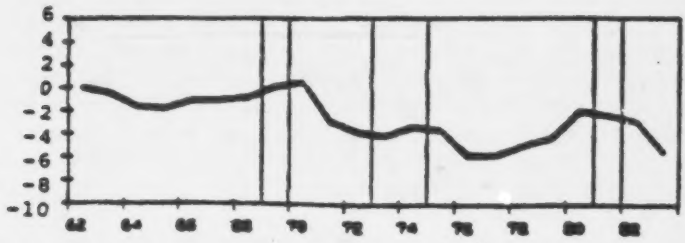
4/ Feige and Pearce (1976) have helped justify this procedure, showing evidence that little relevant information is lost when the information set conditioning inflation forecasts is limited to the past values of inflation alone. Other approaches to determining the real cost of funds are, of course, available; see, for example, Corcoran and Sahling (1982).

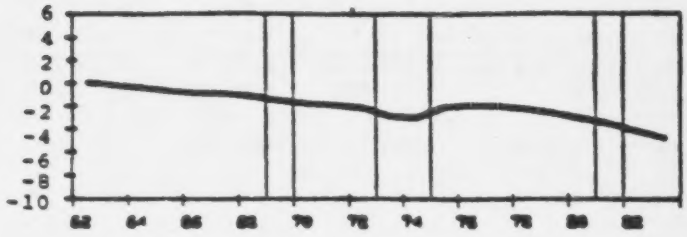
FIGURE 2. CHANGES FROM 1962 LEVEL OF RENTAL PRICE FOR PRODUCERS' DURABLE EQUIPMENT CAUSED BY VARIATIONS IN PARTICULAR UNDERLYING FACTORS, 1962-1983 (In percentage points)

Overall Change in Rental Price

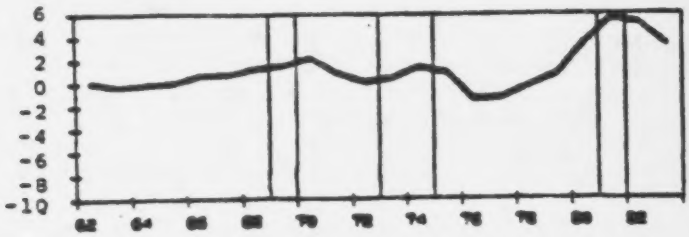



Components of Change Caused by Variations in:

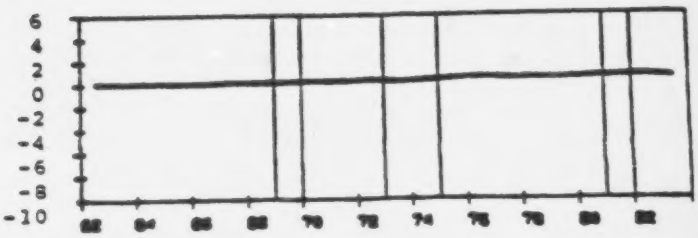
Relative Price of Equipment Goods



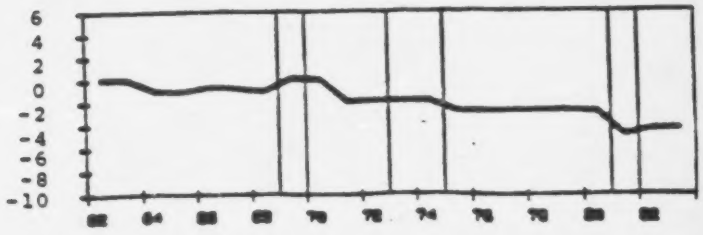

Real Interest Rate




Inflationary Expectations




Federal Tax Policy



Real interest rates, in contrast, contributed no trend (just a series of sharp upward ticks), and inflationary expectations contributed only a slight upward trend. 5/

The direct effect federal tax policy has worked consistently--and with some success--since 1962 to reduce the rental price of equipment as demonstrated in Figure 2. The effects of particular policy measures are distinguished in Figure 3. Measures that worked to reduce the rental price were repeal of the basis adjustment in 1964, the liberalization of the investement tax credit in 1975, and acceleration of depreciation in 1971 and 1981. (A basis adjustment is a modification of tax depreciation guidelines to take account of, and partially offset, changes in the investment tax credit.) The only contrary moves were the temporary repeal of the investment tax credit in 1969-1970 and the partial restoration of the basis adjustment under the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). Of course, liberalization of the tax code could have had indirect effects tending to increase the rental price, but these are not taken into account here. For example, tax cuts may have helped raise interest rates by stimulating output, thereby increasing the demand for credit.

What factors account for the behavior of the rental price of nonresidential structures? Figure 4 shows a decomposition like that presented earlier for equipment. The rental price, shown in the top panel,

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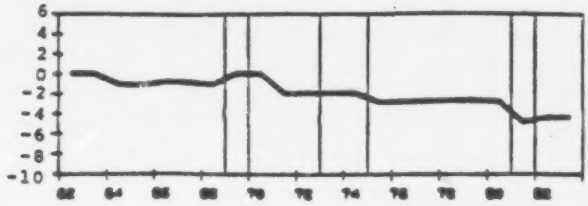
5/ The essentially neutral effect of inflationary expectations on the rental price for equipment conceals two offsetting effects. Inflationary expectations as measured in this study rose sharply throughout the period. One partial result was, ceteris paribus, to reduce the rental price of equipment. This is because the inflation premium in nominal interest payments is deductible under the corporate and personal income taxes. Thus real after-tax interest rates decline when inflationary expectations rise, holding all other factors the same, and this reduces the rental price.

There is, however, a second channel through which rising inflation expectations affect the rental price, and in this case they increase it. The present value of firms' tax deductions for depreciation is computed using a nominal interest rate, which, other things being equal, rises when inflationary expectations rise. The resulting decline in the present value of depreciation deductions increases the rental price. In the case of producers' equipment, this increase has slightly more than offset the decrease working through the tax deductibility of interest, causing the rental price to rise slightly on trend.

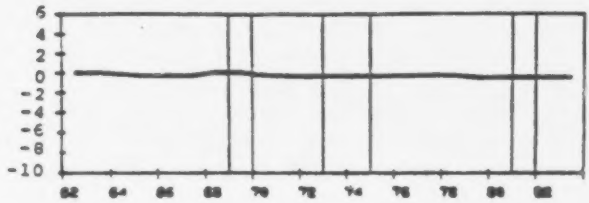
FIGURE 3. CHANGES FROM 1962 LEVEL OF RENTAL PRICE FOR PRODUCERS' DURABLE EQUIPMENT CAUSED BY VARIATIONS IN FEDERAL TAX POLICY, 1962-1983 (In percentage points)

Overall Change in Rental Price Caused by Changes in Tax Provisions

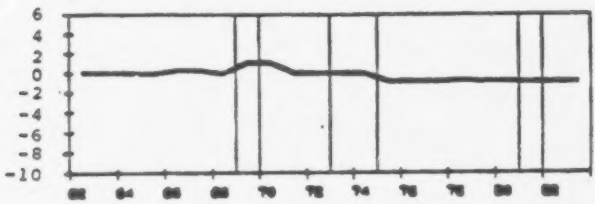



Components of Change Caused by Variations In:

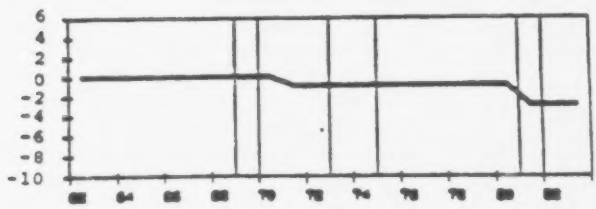
Statutory Tax Rate



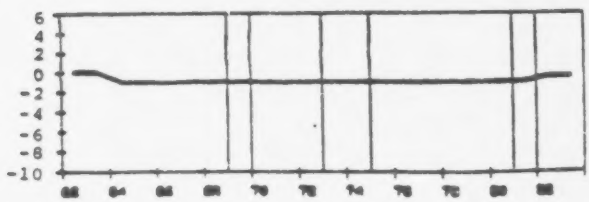

Investment Tax Credit




Depreciation Policy




Basis Adjustment



has closely followed the behavior of the real interest rate (middle panel of Figure 4). Tax policy (bottom panel) had little impact until the liberalization of depreciation under The Economic Recovery Tax Act of 1981 (ERTA), chiefly because structures were not eligible for the 1971 depreciation changes, and they are also mostly ineligible for the investment tax credit. 6/ The relative price of nonresidential buildings has grown on trend since 1962, imparting a positive trend to the rental price, as the second panel shows. A partial offset to this effect has come from inflationary expectations, as demonstrated in the middle panel of Figure 4. Unlike the case of producers' equipment, the rising trend in inflationary expectations served on balance to reduce the rental price for structures.

## IMPACTS OF CHANGES IN INTEREST RATES ON SPENDING IN DIFFERENT SECTORS

How is actual spending in a given sector affected by changes in that sector's rental price? This is not easy to tell, because other factors, such as changes in output, also have strong effects on investment. To disentangle the effects of changes in rental prices from those of changes in output and other relevant variables, statistical techniques must be applied to historical data. This study uses estimates of the responsiveness of spending to rental-price changes drawn from published statistical studies designed to isolate such sensitivities. The CBO results should be understood to represent the estimated sensitivity on the assumption that all other relevant factors are held constant. (CBO has not attempted a complete survey of the wide statistical literature concerning the impacts of interest rates on spending. Instead, only certain relatively recent and widely cited studies were reviewed. Thus the references that were used may not be representative of the wider literature—indeed, some ambiquity creeps in, even with the small sample used here, as Table 1 shows. The issue of spending response to interest rates is as uncertain as most empirical issues in economics.)

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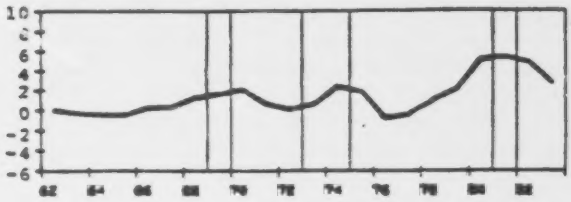
6/ Ineligibility for the investment tax credit implies that the basis adjustment is also largely irrelevant to structures. Nonresidential structures in the National Income Accounts (NIA), the category used here, are not wholly unaffected by the investment tax credit because public utility structures, which are eligible for the credit, are included among nonresidential structures in the NIA. The sensitivity of NIA nonresidential structures to the investment tax credit may have been greater during the period before 1981 than is represented in this study because the tax law allowed "component depreciation" during that period. Under that system, certain integral components of structures, such as elevators, were treated as equipment for tax purposes.

FIGURE 4. CHANGES IN RENTAL PRICES FOR NONRESIDENTIAL STRUCTURES CAUSED BY VARIATIONS IN PARTICULAR UNDERLYING FACTORS, 1962-1983 (In percentage points)

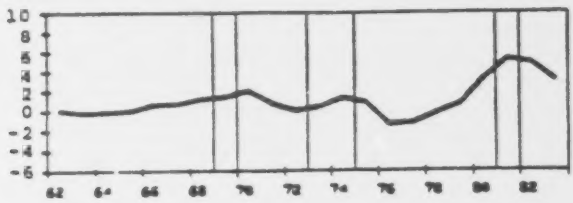
Overall Change in Rental Price



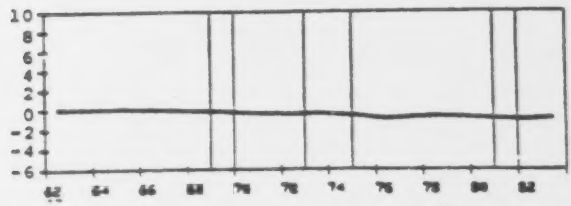

Components of Change Caused by Variations in:

Relative Price of Nonresidential Structures

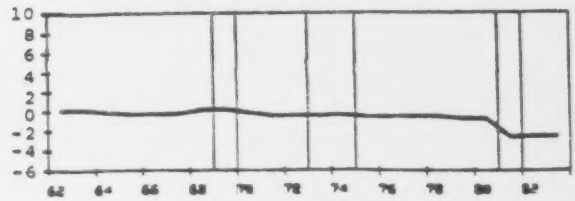
Real Interest Rate




Inflationary Expectations




Federal Tax Policy



The results of the CBO analysis are presented in Table 1. The first column shows estimates or ranges of estimates from the literature on the sensitivity of investment to changes in its rental price caused by changes in real interest rates. The second column displays calculations from CBO's rental-price model of the responsiveness of rental prices to changes in the underlying real interest rate. The product of these two estimates, shown in the third column, is the estimated responsiveness of spending to real interest rates.

Even the qualitative story told by the data in Table 1 is garbled by a persistent controversy, reflected in the first two lines, over the sensitivity of business investment to changes in its rental price. The higher figures given for producers' durable equipment and for nonresidential structures is based on the widely held view associated with Professor Dale Jorgenson which implies a relatively high degree of sensitivity. If these views are accepted, then the implication of the table is that housing is the most sensitive sector, followed by nonresidential structures, producers' equipment, and automobiles. In quantitative terms, housing starts are estimated to change by nearly 9 percent for every 10 percent change in the real interest rate, while at the opposite extreme consumer purchases of automobiles change by about 1 percent for the same change in rates. The main factor explaining this ordering is the relative importance of depreciation in the total annual cost of holding a given asset. The longer-lived an asset, the lower its annual depreciation cost and the larger the percentage by which its total cost (rental price) changes with a given change in rates. Taking account of the sensitivity of spending to rental prices does not alter this ordering.

TABLE 1. ESTIMATED RESPONSIVENESS OF SECTORAL SPENDING TO CHANGES IN REAL INTEREST RATES

| Sector | Elasticity of Spending to Rental Price (1) | Elasticity of Rental Price to Interest Rate (2) | Elasticity of Spending to Interest Rate (1) x (2) (3) |
|---|---|---|---|
| Producers' Durable Equipment | 0.2 to 1.0 a/ | 0.2 | 0 to 0.2 a/ |
| Nonresidential Structures | 0.2 to 1.0 a/ | 0.6 | 0.1 to 0.6 a/ |
| Owner-Occupied Housing | | | 0.9 b/ |
| Consumer Automobiles | 1.0 c/ | 0.1 | 0.1 |

a/ Higher figure is based on estimates by Jorgenson (1974). Lower figure is based on estimates by Chirinko and Eisner (1981, p. 151). Figures refer to long-run impacts.

b/ Based on estimated elasticity of demand for housing starts to nominal mortgage rate of 1.5 developed by James Kearl and Kenneth Rosen and reported in Kearl, Rosen, and Swan (1975, p. 103). Similar estimates are reported in many other studies also surveyed in the Kearl-Rosen-Swan paper. To promote comparability with other elasticities shown in this table, the elasticity has been converted to one with respect to real rather than nominal rates by multiplying it by 0.6, CBO's estimate of the average ratio of the real to the nominal mortgage rate over Kearl and Rosen sample period.

c/ Based on results reported in Mishkin (1976, p. 651). This figure is consistent with those reported in other studies of the demand for automobiles; see Gomez-Ibanez, Leone, and O'Connell (1983), p. 200.

## APPENDIX. CBO'S RENTAL PRICE MODEL

The procedure CBO uses for computing rental prices for business capital is based on the following expression for the price, c:

$$c = \frac{P_i}{P(1-u)} (r+d)(1-k-uZ(1-dum\ k)) \qquad (1)$$

where

$$r = i(1-Lu)-inf \qquad (1a)$$

where $P_i$ is the price index for the particular asset concerned; P is a general price index; r is the after-corporate-tax real cost of capital; d is a depreciation rate; u is the marginal corporate tax rate (consisting of both federal and state and local taxes); Z is the present value of tax allowances for depreciation discounted with a before-tax nominal interest rate; k is the investment tax credit rate; dum is a dummy variable accounting for the presence, absence, or (as in the post-1982 period) partial presence of a basis adjustment; i is the nominal interest rate; inf is inflationary expectations; and L is the leverage ratio, taken to be the current ratio of corporate debt to the sum of corporate debt and equity.

This measure differs only slightly from the formulation originally proposed by Hall and Jorgenson (1967). It departs from their expression only in that depreciation allowances are discounted using a nominal interest rate.

The nominal interest rate, i, used for business assets is Moody's BAA corporate bond rate average. The expression (1a) for the real after-tax cost of capital takes account of the fact that nominal interest (but not dividend) payments are deductible. This treatment avoids complications in measuring the equity cost of capital by assuming that the before-tax nominal returns to debt and equity are equated by arbitrage. The expected rate of inflation, inf, is estimated using the procedure described in Footnote 5 on page 9.

The real depreciation rate estimates are weighted averages of the rates estimated by Hulten and Wykoff (1981), in which the weights are lagged real investment flows from the National Income Accounts (NIA). The investment tax credit rates are weighted averages of the statutory rates, with the weights also derived from the NIA investment flows. The federal component of the marginal corporate tax rate is the statutory rate. The state and local component is taken to be the average effective rate. The deductibility of federal taxes under state and local income taxes is taken into account.

The streams of depreciation deductions allowed for assets with given useful lifespans are calculated using a program that accounts precisely for the half-year convention, for the particular depreciation methods available to a given asset, and for the optimal time to switch from one method to another. This algorithm is applied separately during the 1962 to 1980 period to nonresidential structures, utilities, residential structures, and producers' durable equipment, in each case using a tax lifetime computed as a weighted average of those available to the subcomponents, with the weights again derived from NIA real investment flows. After 1980, the depreciation deduction streams are taken directly from the two recent pieces of tax legislation, ERTA and TEFRA. In all years, the streams are discounted using the before-tax nominal rate and then, using NIA investment flows as weights, combined into aggregates corresponding to the NIA categories--producers' durable equipment, nonresidential structures, and residential structures.

For state and local construction, the rental price expression is equivalent but with all tax-related terms dropped:

$$c = \frac{P_i\,(i - inf + d)}{P}$$

For consumer automobiles and owner-occupied housing, a simpler expression is used:

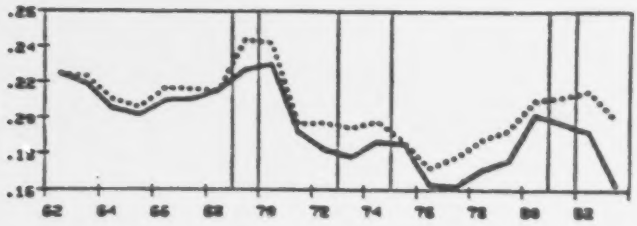
$$c = \frac{P_i\,(i(1-t) - inf + d + t_p)}{P}$$

Here, t is a DRI estimate of the marginal personal tax rate (accounting for both federal and state and local taxes); i is the mortgage commitment rate; and d is an estimate of the depreciation rate. For housing, the depreciation-rate estimate is taken from the MPS model, and for automobiles it is taken from Hulten and Wykoff (1981). A rough estimate of 2 percent, expressed as $t_p$, represents the average property tax rate. For calculations based on nominal rather than real rates the expected inflation rate, inf, is dropped.

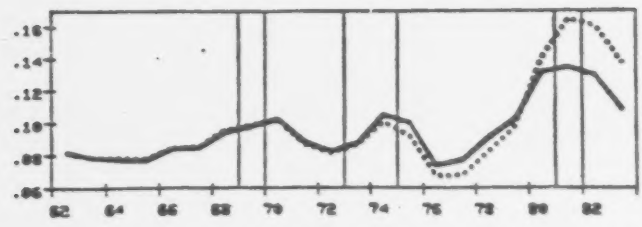
The linear approximation of the rental prices for producers' durable equipment and nonresidential structures used in the calculations shown in Figures 2 through 4 is a first-order expansion of equation (1) in Taylor series. The quality of the Taylor approximation to the rental price is better for nonresidential structures than for producers' equipment, as Figure 5 shows, but in both cases it is close enough to permit conclusions to be drawn with confidence.

FIGURE 5. COMPARISON OF LINEAR APPROXIMATIONS TO ACTUAL VALUES OF RENTAL PRICES, 1962-1983.

Producers' Durable Equipment
Linear Approximation (line)
Actual Value (dot)



Nonresidential Structures
Linear Approximation (Line)
Actual Value (dot)



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Representative HAMILTON. Thank you very much, Mr. Penner.

Of course, the studies which you attached to your prepared statement will be included in the record.

Let's begin with the CBO forecast of interest rates and compare that to the consensus forecast—at least, by the 40 economists of the blue chip economic indicators. In brief, they suggest that interest rates will climb and you suggest they will decline next year.

The average prediction for the 3-month Treasury bills for 1985 was, I think, 10.7 percent, which is slightly above the current level, and a significant rise above what the 1984 average will turn out to be.

Now, you have a projection which shows that the Treasury bill rate will decline next year to 9.7 percent compared to 10 percent in 1984.

So the question is, why is the CBO running counter to the so-called consensus view?

Mr. PENNER. Well, first of all, I think it should be said that interest rates are the very hardest part of our economic forecast and I think it's fair also to say they are the hardest variable for any forecaster to predict.

There really isn't what I would call a significant difference between us and the consensus, given the average error of forecast. However, I think to the extent there is a conceptual difference here, it is our judgment that current interest rates are high enough to slow the economy down and as that slowdown proceeds over the remainder of this year and next year, we think that slowdown will then in turn bring about some reduction in interest rates. But one that it's a fairly small reduction compared to the average this year, going down only to 9.7 percent, as you said.

Representative HAMILTON. Now, if the prediction of the consensus group turns out to be correct and interest rates are in fact somewhat higher, perhaps as much as a full percentage point higher, what kind of an impact would that have on your estimates of the GNP rise and the budget deficit in 1984?

Mr. PENNER. In 1985 you mean?

Representative HAMILTON. Yes.

Mr. PENNER. Well, I think that, first of all, interest rates would be higher if we are wrong that the economy is not going to slow down to the extent to which we predict. I think it fair to say that if the growth rate is significantly higher than we expect, then interest rates would be higher simply because the demand for credit will be higher from the private sector.

On the other hand, if interest rates jump up because of expectational or other more exogenous reasons, then very probably the rate of growth would be somewhat slower than we anticipate. I think you will see, if you look at the consensus forecast, that we are really very close with regard to the rate of growth.

Representative HAMILTON. Is it a typical pattern for us to have declining interest rates when you have growth in the economy? You're predicting growth and declining interest rates.

Mr. PENNER. Oh, you can very easily have that, yes. If you just look at our chart, figure 1, you can see——

Representative HAMILTON. What page is that on, Mr. Penner?

Mr. PENNER. It's the first chart.

Representative HAMILTON. OK.

Mr. PENNER. We had, I think, some further decline after growth started. It is really a matter of how fast the economy is growing. You certainly wouldn't want to say that falling interest rates are inconsistent with any growth at all and, as I said, we have quite a substantial slowdown, which is quite apparent looking at our fourth quarter over fourth-quarter figures. This year we expect 6.6 percent fourth quarter over fourth-quarter real growth, whereas next year we expect only 2.8 percent. Our nominal growth of GNP, which might be a good thing to look at in terms of determining nominal interest rates, is also decelerating quite substantially on a fourth-over-fourth basis, from 10.9 percent to 8.2 percent.

That slowdown is crucial. As I say, the overall big picture underlying our forecast is that these levels of high real interest rates will in fact slow the economy down substantially. Then, with a time lag, that will affect the demand for credit and the rate of interest.

Now that's a very controversial point. People like Henry Kaufman, for example, who are very much more pessimistic than even the consensus that you referred to, just don't feel that real interest rates right now are going to have the kind of bite on economic activity that we think they are going to have.

Representative HAMILTON. Is it correct to say, as a general rule, that interest rates normally rise through an expansion period?

Mr. PENNER. Until the end, yes.

I didn't answer your other question about the effects on the budget deficit.

If we were to be 1 percentage point in error, that would not affect the 1985 deficit very much because we only turn over about half the debt a year. It would affect it by $4 billion, a 1 percentage-point error in forecasting interest rates. That error would grow very rapidly, however, to $10 billion by 1986 and to $26 billion by 1989.

Representative HAMILTON. Your comment about the impact of interest rates on deficits in your statement was that the data is inconclusive.

Is that as precise as you can be? Is it fair to say, for example, that the size of the Government deficit influences interest rates?

Mr. PENNER. It is our judgment and underlying almost everything we say at CBO that there is such a relationship. What we are saying here is that it's a very complicated one and it's a very difficult one to extract from the data. This point, which sounds very technical I know, about whether it's a deficit or the stock of debt, is nevertheless very important for the nature of that relationship.

Representative HAMILTON. Would you define that phrase "stock of debt" for me, please? I'm not sure I know what you're talking about.

Mr. PENNER. What we're talking about is the total amount of Government bonds held by private investors. It is not the total public debt outstanding, but the total debt held by the private people as opposed to what is held by trust funds and by the Federal Reserve.

So you can see in our figure 2, what we have in the immediate short run. The top panel of that series of pictures shows that in the immediate short run we actually have the deficit declining relative to GNP for a brief period. If that were really the important variable to look at, emanating from the Government sector, you would then expect declining pressures on the level of interest rates. But what we are suggesting is perhaps—and I certainly can't prove this beyond any doubt—but

what we think is more important, perhaps, are the lines portrayed in the second panel.

What we have done is to stabilize the deficit through the Deficit Reduction Act, but we have stabilized it at such a high level that each year we are adding so much debt that the stock of debt is still growing.

So looking at the second panel, we would say that there is still upward pressure from the Federal Government on interest rates. The marginal decline we have in our forecast all comes from an assumed reduction in private credit demands as the economy slows down.

Representative HAMILTON. I want to get you to express as precisely as you can what the relationship is then, as you see it, between the deficit and interest rates. How would you describe that, even though the data is inconclusive?

Mr. PENNER. Well, let me give you my own personal judgment, with which many would disagree.

Representative HAMILTON. That's what I'm after.

Mr. PENNER. Many would disagree with me I'm sure, but my own personal judgment is that the important relationship is fundamentally a long-term one and that to extract it you should focus on the second panel—that is to say, on the debt-GNP ratio. And as that debt grows faster than the GNP, there will be continued upward pressures on the levels of interest rates. I think to give you a numerical relationship would be foolish because I think the evidence is just all over the map on that, but that would be my very best judgment.

What that means is that even though we have stabilized the deficit now and even though, in fact, in the next year we have it declining relative to GNP, there are still upward pressures emanating from the Federal Government on interest rates.

Representative HAMILTON. The figure you referred to a moment ago is the one in figure 2, is that it?

Mr. PENNER. That's right.

Representative HAMILTON. And the second one on that page, the second panel?

Mr. PENNER. The second panel, yes.

Representative HAMILTON. So it's the Federal debt held by the public as a percentage of GNP that you think is the key indicator?

Mr. PENNER. Yes. The public includes the Federal Reserve. That's an easier number to get. I guess if I were really precise, it would be the amount held by private investors. In other words, you can take the Fed out of there, but the picture would not look any different with that minor adjustment.

Representative HAMILTON. Ordinarily you would expect interest rates as high as we have had to cause a downturn in certain sectors of the economy, like home building and business investment. But that downturn has not yet happened. Why has it not happened?

Mr. PENNER. Well, first of all, while home building, as you indicated, has risen rapidly from a very low trough, it is still somewhat lower than we would otherwise anticipate at this stage of the business cycle. Our own analysis, which is confirmed by that very fact, is that the tax cut of 1981—in particular the accelerated depreciation allowances—had a very important stimulative effect on business, but note it did not do much for personal home ownership. So that is what we would point to and, indeed, we have tried to portray that in figure 3, where we try to separate out the effects of interest rates and the ef-

fects of tax law on the cost of making an investment as compared to 1980.

So the changes in tax law, even as modified in 1982 by TEFRA, have all by themselves reduced the cost of capital. The interest rate, the big rise in 1981, with some small fall in 1982 and the further fall in 1983, helped. But now again, it's going up, so that, oddly enough, the cost of investing is almost the same as where it started out back in 1980. Similarly, if you look at nonresidential structures, if you look at the bottom part of figure 3, the difference between nonresidential structures and producers' durable equipment, the reason that the latter is so flat and does not fluctuate much with regard to interest rates, is that most of that stuff is fairly short lived. Interest costs just don't play as big a role in determining investments in short lived assets as they do with longer lived investments.

So you see that the nonresidential structures wiggle around a lot more and have been impacted a lot more by interest rates than durable equipment.

Now all of that, I think, is borne out by the results. Home building is not affected very much by the tax law—a little depressed compared to where we would expect it to be. Nonresidential structures, too—a very little bit depressed relative to what we would expect. But producers' durable equipment is just booming at a tremendous rate.

Representative HAMILTON. What does that mean in terms of the next year in those sectors?

Mr. PENNER. Well, I don't want to claim that these are the only things going on, of course. As I said in my testimony, just the increase in the demand for goods resulting from this tremendous economic recovery has enhanced investment potential, as has technological change. This whole computer revolution has been very important in stimulating investment recently.

But in terms of what all of this portends for next year, you see from our chart that you have, because of the interest rate effect, some uptick in the cost of investing in all of these things. If we had shown home building here, it would be the same. And that is one of the many reasons that we do have this slowdown in the economy that I referred to, but certainly no recession. I think that very improbable, but a slowdown of considerable proportion is more likely.

Representative HAMILTON. Before turning to Congressman Scheuer, let me ask a question or two about the relationship of interest rates to inflation.

We've had an inflation rate that's actually been falling, yet interest rates have been going up. How do you explain the fact that you've got a rise in the nominal interest rate with declining inflation?

Mr. PENNER. Well, again, as I said, my best judgment is that this rising stock of debt is playing an important role in that. If you look again back at figure 1—and I think the most important thing to look at there is the real interest rate in the second panel—I think the initial rise in 1981 shown there had a lot to do with monetary policy. Remember, that was the time when we really started to fight inflation in a vigorous way and it was before the deficits got to be really very large. So the first part of that I would say had something to do with monetary policy and then as it continued, I would say it had something to do with deficits.

But there were many other factors playing a role there, as we said. I don't want to say that deficits explain the whole amount at all. Some would argue that it has been very, very hard to beat down inflationary expectations. So as far as especially the long interest rates—those on 30-year bonds—are concerned, while the actual inflation rate has come down, the rate that investors expect in the very long run has been very, very sluggish and very slow to come down.

Representative HAMILTON. So they are not persuaded, then, that we have really got inflation under control?

Mr. PENNER. That's right. That is the implication and obviously, that's very costly. It would be nicer if they could be convinced more easily.

Representative HAMILTON. Congressman Scheuer.

Representative SCHEUER. Thank you, Mr. Chairman.

I have been impressed by your testimony, Mr. Penner.

Mr. PENNER. Thank you.

Representative SCHEUER. I have enjoyed it. You have stated repeatedly in the last 10 or 15 minutes, that continued upward pressure by the Federal Government on current interest rates will slow the economy down substantially. Is that an accurate quote?

Mr. PENNER. Well, let me just amend that a little bit. What I mean is that these high levels of interest rates that we have right now, are, to me, a function of two things—Federal Government borrowing and private borrowing. Those two things together, yes, will slow it down. And next year, if there is no change in policy, the Federal Government will still be adding to interest rate pressures, but with the slowdown we expect on the private side, we will have this small decline in interest rates.

Representative SCHEUER. As to the private borrowing component of that, you wouldn't suggest that that's taking a more downward growth?

Mr. PENNER. No, no.

Representative SCHEUER. You just told us that capital formation is suffering as a result of high interest rates. So it's really a product of the Federal Government borrowing and Federal Government activities.

Mr. PENNER. Yes. Our forecast implies a decreasing role in all this for private borrowing.

Representative SCHEUER. Right. And what I want to suggest and which I would like to clarify is that it seems to me that these high interest rates and the decrease in business activity that they are producing are exacting a rather significant toll on our economy caused by the high interest rates, which in turn is caused by the high deficits. It's sort of a question of the dog chasing its tail.

What I would like you to do perhaps, if you could, is to quantify it for us. If interest rates, instead of being at their current level, were at 8, 8.5, or 9 percent, what would be the increased level of capital formation? What would be the stimulative effect on steel, on autos, on foreign trade? How many more jobs would be produced? Would we be able, through the increased productivity and the increased competitiveness that would derive from this increased level of capital formation and new investments in steel and autos for their products and so forth, to compete effectively in global trade with the Japanese and the

West Germans and the Swedes in all of these products? And how many jobs would that produce and what the tax revenue would be from the increased business activity and the jobs and taxes from incomes from the jobs? In other words, what are we losing in terms of a full economy that taxes on the business income, the new jobs that would be created? What is the price tag, in other words, we can legitimately place, without getting political or argumentative or complicated? What price tag can we place on your statement, that I agree with, that the high current interest rates are providing a significant brake on all kinds of economic activity?

Mr. PENNER. In one of the attachments to our prepared statement, we have attempted to quantify some of that and I am submitting it for the record. But let me try to respond to your questions. What we tried to quantify is simply the first part of your question. That is, how much difference would it make if interest rates were a percentage point or so lower?

Instead of trying to give you all sorts of numbers off the top of my head, let me try and give you the picture as I see it.

Representative SCHEUER. Fine.

Mr. PENNER. In qualitative terms, we have obviously had this huge deficit that is really out of the range of historical experience in a peacetime period. So that in itself makes it hard to analyze. It's such a unique event for us in terms of having it in a recovery.

If you had asked me your question 1 year ago, I would have said that I expected under these circumstances that the economic recovery—which I certainly thought would occur because in the short run the deficit has some stimulative impact—would be heavily weighted toward consumption and we would lose a lot of investment, which as you're suggesting would in fact reduce our productivity, our capacity to grow in the future.

Now that would have been wrong to some degree because in fact, as this recovery proceeded, we have had more investment than I expected and than we more generally expected at CBO.

Why? First of all, the tax bill, as I noted, was very significant in helping that out. Second, a matter we haven't discussed very much yet, but a very important one nevertheless, is that we have been able to borrow tremendously more from international capital markets than I had thought possible a year ago. On the one hand that has helped us enormously. It has meant that interest rates, though high, are lower than they obviously would be if we couldn't have undertaken that international borrowing. It has meant that our level of capital formation has been higher than it would have been otherwise.

On the other hand, it has had substantial short- and long-run costs. In the short run, it has raised the value of our dollar, imposing a terrible adjustment problem on the trading industry. Actually, our exporters have done very badly indeed, and in the case of autos and steel that shock may have been imposed on the trend that was downward in any case. So that has been the costly side of all of that.

Now, in the longer run, the fact that we have had this borrowing will allow production in the United States to be higher than it would be otherwise and real wages to be higher than they would be otherwise. But, of course, if this continues we will owe more and more interest and dividends to foreigners as time goes on, and that will be

a cost to our economy. It means that a growing amount of our increased production will be pledged to pay off all of this borrowing. So that side of it lowers our standard of living in the very long run.

However, I've got to say that despite all the problems, we are much luckier having had that foreign borrowing than if we had not had it. And as we say in our testimony, one of the risks to our outlook—although we are not forecasting this—is that foreigners may not continue to lend to us at the rate that they have been lending. I say foreigners. That's a bit inaccurate. Much of the change has come from the fact that Americans who used to invest a lot more abroad are now keeping the money at home to take advantage of the high interest rates that we have.

Representative SCHEUER. I do not doubt that foreigners are investing here. They are investing here for two reasons: First, because of these very high interest rates that you pointed out; and second, because of the safe haven factor that we're all familiar with, and thank God they view us as a safe haven and I hope they continue to be right.

Mr. PENNER. And I would add the very rapid rate of economic expansion we have here compared to that in Western Europe. That's yet another factor.

Representative SCHEUER. Yes, that is true. I'm not sure how we compare with Japan, for example, where interest rates are a great deal lower, but there's no doubt that we can at these interest rates attract foreign capital ipso facto. The interest rates are a product of supply and demand and as the much discussed economic forces work, at such a level of interest rates we can attract enough capital to fulfill our needs.

What I'm suggesting is that the high interest rates have discouraged domestic capital investment and much spending for new plant and equipment and therefore we are paying a price in reduced economic activity and new jobs, decreased foreign trade of all kinds. And what I'm hoping you will be able to do is quantify that for us.

Now if you can't do it today and I can readily understand why you couldn't pull these figures out of a hat, could you get your computers or get your people to push the right buttons on the computers and give us some estimate at various levels of reduced interest rates, going down to let's say 8 or 9 or 10 percent or whatever, and give us some estimate?

Mr. PENNER. Well, as I said, yes—we have made a start on that in our attachment here—but we can go beyond that for you.

Representative SCHEUER. That would be helpful.

Mr. PENNER. Now again, there is a lot of disagreement about these things, so what I can give you are "ranges of respectable thought," which I guess is the best way to put it.

[The following information was subsequently supplied for the record:]

## Economic Impacts of Lower U.S. Interest Rates

What are the likely impacts of a decline in U.S. interest rates on business investment, housing, productivity, and the international competitiveness of U.S. industries? Some of these magnitudes, unfortunately, are impossible to estimate with any confidence or precision. In particular, while most analysts believe that U.S. goods would be more competitive on world markets if U.S. interest rates were lower, few would venture an estimate of how much. In the short run, a decline in U.S. rates would probably reduce net capital inflows to the U.S. from abroad and thereby reduce the dollar exchange rate. This would reduce the foreign currency prices of U.S. export goods and increase the dollar prices of U.S. imports, improving our balance of trade. It is very difficult, however, to predict by how much capital inflows and exchange rates would change in response to a decline in U.S. rates. The answer depends in part on how foreign interest rates would behave, since U.S. net capital flows depend not on the level of U.S. rates but on the differential between them and foreign rates. Even if we could predict how the interest-rate differential would react to a reduction in U.S. rates we don't know how much capital flows would change because they also depend to an unknown extent on world confidence in the political stability, expectations of future exchange rate changes, and economic growth potential of the U.S.

Investment Responses. The table below shows CBO estimates of how much stronger investment in four categories might have been during the second quarter of 1984 (the most recent date for which figures are available) if interest rates had been two percentage points lower across the board. 1/ These figures are based on estimates of the direct responsiveness of investment to interest rates alone, and thus do not reflect indirect influences. For example, the figures do not take account of the fact that reduced rates might stimulate spending in other sectors besides those being considered here, which might in turn stimulate higher investment. The figures also do not take any account of other impacts of the means by which rates were reduced in the first place. For example, if rates were brought down by reducing the federal deficit, there might well be direct effects of the policy change on investment other than those working through interest rates. The figures, finally, are long-run estimates and should therefore be interpreted as evidence on how much larger investment would be if rates had already been 2 percentage points below their actual values for several years at least.

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1/ Estimates for other interest-rate-level differences would vary proportionately. For example, the impacts of a one-percentage point difference in interest-rate levels would be half as large as those shown here for a two-percentage point difference.

RESPONSE OF U.S. INVESTMENT TO 2-PERCENTAGE POINT LOWER LEVELS OF REAL INTEREST RATES IN 1984:II

| Category | Increase | |
|---|---|---|
| | (billions of 1972 dollars) | (percent of actual 1984:II level) |
| Producers' Durable Equipment | 0 to 7.4 | 0 to 5 |
| Nonresidential Construction | 1.5 to 8.7 | 2.5 to 15.2 |
| Housing | 18.2 | 31.1 |
| Consumer Automobile Purchases | 1.7 | 3.5 |
| Total | 21.4 to 36.0 | 6.9 to 11.5 |

SOURCE: Congressional Budget Office estimates. For detailed background, see CBO staff memorandum "The Effect of Changes in Interest Rates on Different Sectors of the U.S. Economy" (June 1984), pp. 11-14.

Productivity Implications. Assessing the determinants of changes in labor productivity is difficult and imprecise, so it is possible only to make crude guesses about how much productivity might respond to the increased capital investment that might result from reduced interest rates. Calculations using a production-function approach to which many economists would subscribe, however, imply that productivity (output per person-hour) might increase in the long run by about two percent of its otherwise-predicted level in response to the two-percentage point interest-rate reduction that was discussed above. This implies that the price level might ultimately be reduced about two percent. However, this adjustment would be spread out over many years. While inflation rates would be lower during that period of adjustment, the reductions in annual inflation would be very slight.

Other Effects of Lower Rates. These estimates of increased capital investment and labor productivity and of lower inflation relate to the aggregate U.S. economy. We have not attempted to estimate the way particular industries are affected because the models that would be needed to make such analyses are not available at CBO.

How much additional employment might a reduction in interest rates produce? In these instances it is not clear that any significant improvements would come about. While some temporary improvement in employment might occur as a result of short-run multiplier effects of the increased investment, it would probably only be temporary, and even this is hard to predict with confidence because it depends on the means by which rates were reduced. If, for example, they were reduced by cutting the federal deficit, this might have negative short-run multiplier effects that would offset the gain in employment.

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Representative SCHEUER. Now in your report you talk about the large borrowing and you say this portends continued high interest rates which would hold down domestic capital formation below the levels that would otherwise be attained. It also generates uncertainty about future tax, spending and monetary policies, and casts a shadow over what so far has been an impressive recovery.

Now could you go a little further than that and say that this shadow, in effect, could be construed to symbolize a vote of no confidence in the future economic and inflation performance of the country?

Mr. PENNER. I think that would be too strong, sir, given what's gone on so far. We have just had a tremendously good recovery and the most important implication of it—or one of the nicest characteristics of it—has been an almost total lack of any sign that inflation is reaccelerating.

Representative SCHEUER. Yes; but a nice aspect of recovery is increased capital formation and increased business spending. That's almost invariably a component of recovery. It isn't here. We have an anomalous, strange kind of recovery, with reduced capital spending.

What I'm asking is, whether reduced capital formation, presumably composed of both foreign investment and domestic investment, is an early warning signal to us. Although investors around the world and here are taking advantage of our interest rates, are they doing it with a few little trepidations and reservations and without a great deal of confidence in the future and in our ability to cope with inflation and to cope with the basic economic ingredients that have produced these very high interest rates and continually record, unprecedented budget deficits, and the inability of our Government to come to terms and to cope effectively with the deficit?

And let me say that there's enough blame here to spread all over the map. This is not a partisan statement. The Democrats and the Republicans in the Congress have been equally ineffectual in the House and the Senate in meeting up with this problem. So, I'm not trying to be cute.

Mr. PENNER. First of all, let me say that, so far things have gone extremely well, even with respect to the total level of capital formation. Producers' durables are just booming. I don't want to exaggerate the very slight weakness in nonresidential structures. That's just a sort of minor shortfall from what you would normally expect. So, even capital formation has been extraordinarily good during the recovery.

I think that, with regard to the deficit and the outlook, there are two levels of concern that I would like to differentiate. One is almost purely arithmetic. That is, you can run a deficit at such a level that just the interest bill on all the debt you're creating gets out of hand. We are in a situation where we are borrowing to pay interest and we are borrowing to cover a deficit in excess of interest. Moreover, just as a matter of arithmetic, we know that cannot go on forever because our interest bill is growing far faster than our GNP. At that level of discourse, it's just the same as a private business or a private household. You obviously can't endure an interest bill on our borrowings that rises faster than your income forever. Something has to give.

And further, in the case of the political system, of course, there is a danger that the interest bill is going to grow so fast that politically you can't even raise taxes or cut spending sufficiently to cover it.

In the case of ordinary households or businesses, they simply declare bankruptcy at some point and that's the end of it. Countries don't usually do that. Countries, unfortunately or fortunately, have another way out of it. They can finance Government by the creation of money and that is a grave concern.

Most recently that happened in Israel, where they decided they couldn't borrow any more because the interest bill was so high; they couldn't cut spending; they couldn't raise taxes politically. So they do it by the creation of money. Last year they had 200 percent inflation. I gather that more recently it's been running even higher than that. That is a grave concern.

I am not forecasting that that will happen here. I have more confidence in our system than that. I think we are going to correct the situation and, indeed, in terms of that particular picture, this Deficit Reduction Act, I think, was much more important than most people perceived. I know it doesn't show up all that well in our charts, but if you compare our projections of last February with our projections today—with various economic assumptions washing out, the main difference being that legislation—it is a better picture now of significant proportions, I would say, than it was then.

This problem of the thing getting out of hand just arithmetically is not a matter of economic theory or anything else. It is obviously just common sense.

Assuming we can stabilize the interest bill and, in my judgment—and I'm making a lot of assumptions obviously when I enunciate this judgment—we would greatly reduce the probability of that if we could get the deficit down to less than 3 percent of the GNP from today's level of around 5 percent.

Well, if we could reach that point—and I'm not saying that I would be really happy with a deficit equal to 3 percent of the GNP—but at that point it no longer becomes a matter of pure arithmetic. Then it becomes a matter over which economists argue a lot—how much pressure on interest rates do you get from that 3 percent of the GNP; do we really want to absorb that much savings from the private sector for the Federal Government purposes; what does it imply in terms of the well-being of this generation compared to our children and grandchildren; and how do we want to treat them relative to how we want to treat ourselves, and so forth?

So you get into much more difficult issues to resolve at that point. Nevertheless, they are still obviously very important issues.

Representative SCHEUER. What is the experience of other countries around the world in terms of the percentage of GNP represented by their deficits?

Mr. PENNER. Well, in fact, I think one of the reasons that we are able to attract so much investment is that—I'm generalizing terribly and we can get you more precise numbers for the record—but we are not in that terrible a situation relative to a lot of the Western democracies. Indeed, when you look back in history, if you look not at the deficit relative to GNP but at the total stock of debt outstanding, it didn't seem like it at the time, but we were extraordinarily responsible fiscally from the long period of World War II until about 1974.

Again, if you look at what is clearly my favorite chart here, the one showing the debt-GNP ratio, you can see that it reached a trough in

1974, and it has been on an upward path almost ever since, with some brief interruptions, and has been really on a straight-out path in the 1980's.

So again, one of the reasons that I would certainly not forecast us getting into a situation in which the only way out was to print money is that we started in such a good position. Relative to other countries, our interest bill to GNP ratio, which I think is the key to look at in all of this, is in even better shape than our deficit to GNP ratio. But we can give you a lot of international comparisons on that if you like.

Representative SCHEUER. That would be interesting. Thank you very much. I very much appreciate your testimony.

[The following information was subsequently supplied for the record:]

Deficits in Other Countries

The table below shows recent OECD estimates of the ratios of the deficit to GNP in 18 industrialized countries. These data relate to "general" government budgets, which in the case of the U.S. means the consolidated budgets of the federal, state, and local governments. While there are conceptual problems with this accounting convention, it is the only way to compare different countries, in which different levels of government take on varying degrees of importance.

As the table shows, the overall government deficit in the U.S. in 1983 (as measured by the OECD) was 3.9 percent of GNP, below the average for the group as a whole as well as that for the seven most important OECD countries (the U.S., Japan, West Germany, France, the United Kingdom, Italy, and Canada). Over the entire period since 1970, too, the U.S. deficit is relatively low when compared to those in other countries: 1.8 percent of GNP for the U.S. versus 2.2 for Japan, 2.2 for Germany, 1.6 for Canada, and 2.5 for the U.K.

I also attach a table showing OECD estimates of structural (or "cyclically adjusted") deficits for the same countries as a percentage of cyclically-adjusted GNP. 2/

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2/ There are two lines of data for each country because two alternative estimates of cyclically-adjusted GNP were used. The top line uses a GNP estimate that interpolates between the peaks of successive business cycles, while the second line instead interpolates between the midpoints of successive expansion periods.

ATTACHMENTS

Table. General Government Conventional Fiscal Deficits, 1970-84

(Percentage of GNP)

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | -2.9 | -2.4 | -2.2 | 0.2 | -2.4 | 0.6 | 3.0 | 0.7 | 2.2 | 1.5 | 0.6 | -0.5 | -0.4 | 4.0 | 3.7 |
| Austria | -1.0 | -1.5 | -2.0 | -1.3 | -1.3 | 2.5 | 3.7 | 2.4 | 2.8 | 2.4 | 1.3 | 1.2 | 2.6 | 3.3 | 2.3 |
| Belgium | 2.0 | 3.0 | 4.0 | 3.5 | 2.6 | 4.7 | 5.4 | 5.5 | 6.0 | 7.0 | 8.2 | 12.1 | 11.0 | 11.1 | 10.3 |
| Canada | -0.9 | -0.1 | -0.1 | -1.0 | -1.9 | 2.4 | 1.7 | 2.4 | 3.1 | 1.8 | 2.3 | 1.1 | 5.3 | 5.9 | 5.3 |
| Denmark | -3.2 | -3.9 | -3.9 | -5.2 | -3.1 | 1.4 | 0.3 | 0.6 | 0.3 | 1.9 | 3.3 | 6.7 | 9.4 | 7.8 | 6.0 |
| Finland | -4.4 | -4.6 | -3.9 | -5.8 | -4.7 | -2.7 | -5.0 | -3.2 | -1.4 | -0.5 | -0.5 | -1.5 | 0.5 | 1.4 | 0.7 |
| France | -0.9 | -0.7 | -0.8 | -0.9 | -0.6 | 2.2 | 0.5 | 0.8 | 1.9 | 0.7 | -0.2 | 1.0 | 2.6 | 3.2 | 3.5 |
| Germany | -0.2 | 0.2 | 0.5 | -1.2 | 1.3 | 5.7 | 3.4 | 2.4 | 2.5 | 2.7 | 3.1 | 3.8 | 3.5 | 2.7 | 1.4 |
| Greece | 0.1 | 0.9 | 0.3 | 1.4 | 2.2 | 3.4 | 2.6 | 2.1 | 1.7 | 1.9 | 3.1 | 12.6 | 9.9 | 9.9 | 9.8 |
| Ireland | 3.7 | 3.5 | 3.2 | 4.2 | 7.0 | 11.3 | 7.5 | 6.9 | 8.8 | 10.7 | 11.6 | 13.9 | 16.1 | 13.6 | 12.3 |
| Italy | 5.0 | 7.1 | 9.2 | 8.5 | 8.1 | 11.7 | 9.0 | 8.0 | 9.7 | 9.5 | 8.0 | 11.9 | 12.7 | 11.8 | 12.4 |
| Japan | -1.9 | -1.4 | -0.4 | -0.5 | -0.4 | 2.7 | 3.7 | 3.8 | 3.5 | 4.8 | 4.9 | 4.0 | 3.4 | 3.1 | 2.3 |
| Netherlands | 0.8 | 0.5 | 0.6 | -0.6 | 0.4 | 3.0 | 2.9 | 2.1 | 3.1 | 4.0 | 4.1 | 5.4 | 7.4 | 6.6 | 5.9 |
| Norway | -3.2 | -4.3 | -4.5 | -5.7 | -4.7 | -3.8 | -3.1 | -1.7 | -0.6 | -1.8 | -5.0 | -5.4 | -4.9 | -5.4 | -2.4 |
| Spain | -0.7 | 0.6 | -0.3 | -1.1 | -0.2 | — | 0.3 | 0.6 | 1.8 | 1.7 | 2.0 | 3.0 | 5.8 | 6.0 | 5.7 |
| Sweden | -4.4 | -3.2 | -4.4 | -4.1 | -2.0 | -2.8 | -4.5 | -1.7 | 0.5 | 3.0 | 3.6 | 4.7 | 6.2 | 5.0 | 3.5 |
| United Kingdom | -3.0 | -1.5 | 1.2 | 2.6 | 3.7 | 4.5 | 4.9 | 3.1 | 4.2 | 3.2 | 3.5 | 2.8 | 2.1 | 3.7 | 2.8 |
| United States | 1.1 | 1.5 | 0.3 | -0.6 | 0.3 | 4.2 | 2.1 | 0.9 | -0.2 | -0.6 | 1.2 | 0.9 | 3.8 | 3.9 | 3.1 |
| Total major seven | 0.1 | 0.9 | 0.6 | — | 0.8 | 4.3 | 2.9 | 2.2 | 2.2 | 1.7 | 2.4 | 2.5 | 4.0 | 4.1 | 3.4 |
| Total smaller countries | 1.4 | 1.2 | 1.2 | 1.3 | 0.9 | 0.9 | 1.1 | 1.0 | 2.1 | 2.5 | 2.6 | 3.7 | 4.9 | 5.4 | 4.9 |
| Total of above countries | 0.1 | 0.6 | 0.4 | 0.1 | 0.6 | 3.9 | 2.7 | 2.0 | 2.2 | 1.8 | 2.4 | 2.7 | 4.1 | 4.3 | 3.6 |

Source: Organization for Economic Cooperation and Development (OECD).

Table. General Government Structural Fiscal Deficits, 1970-84

(Percentage of GNP)

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | -2.9 | -1.9 | -1.9 | 1.1 | -2.0 | 0.1 | 2.7 | -1.0 | 0.3 | -0.2 | -1.4 | -1.2 | -2.1 | 1.6 | 2.9 |
| | -2.2 | -1.2 | -1.2 | 1.8 | -1.3 | 0.8 | 3.3 | -0.3 | 1.0 | 0.5 | -0.7 | -0.6 | -1.4 | 2.3 | 3.6 |
| Austria | -2.1 | -2.4 | -2.3 | -1.3 | -1.2 | 0.5 | 2.7 | 2.1 | 1.5 | 2.4 | 1.6 | 0.2 | 1.3 | 2.2 | 1.6 |
| | -1.6 | -1.9 | -1.8 | -0.8 | -0.7 | 1.0 | 3.2 | 2.7 | 2.0 | 2.9 | 2.1 | 0.7 | 1.8 | 2.7 | 2.1 |
| Belgium | 2.0 | 2.3 | 4.0 | 4.8 | 4.4 | 3.0 | 5.9 | 4.1 | 4.3 | 5.1 | 7.4 | 9.1 | 7.7 | 7.0 | 6.2 |
| | 3.6 | 3.9 | 5.7 | 6.4 | 6.0 | 5.5 | 7.5 | 5.8 | 5.9 | 6.8 | 9.1 | 10.7 | 9.3 | 8.6 | 7.8 |
| Canada | -1.4 | -0.1 | 0.2 | -0.2 | -1.1 | 2.4 | 2.0 | 2.2 | 2.9 | 1.6 | 1.7 | 0.5 | 1.2 | 1.9 | 2.1 |
| | -0.3 | 1.0 | 1.3 | 0.9 | — | 3.5 | 3.1 | 3.3 | 4.0 | 2.7 | 2.8 | 1.6 | 2.3 | 3.0 | 3.2 |
| Denmark | -3.2 | -4.4 | -3.2 | -3.9 | -3.9 | -1.7 | -0.1 | 0.1 | -0.7 | 1.9 | 1.6 | 2.7 | 6.6 | 5.5 | 4.4 |
| | -2.4 | -3.6 | -2.3 | -3.1 | -3.1 | -0.8 | 0.7 | 0.9 | 0.2 | 2.7 | 2.4 | 3.5 | 7.5 | 6.4 | 5.3 |
| Finland | -5.4 | -4.6 | -4.8 | -5.8 | -4.7 | -3.6 | -7.0 | -6.2 | -4.6 | -1.7 | -0.5 | -2.1 | -0.2 | 0.9 | 1.2 |
| | -4.8 | -4.0 | -4.2 | -5.2 | -4.0 | -2.9 | -6.3 | -5.6 | -4.0 | -1.1 | 0.2 | -1.4 | 0.4 | 1.5 | 1.8 |
| France | -0.9 | -0.7 | -0.4 | -0.4 | -0.7 | 0.4 | -0.2 | 0.2 | 1.7 | 0.8 | -0.8 | 0.2 | 0.6 | 0.7 | 0.1 |
| | 0.4 | 0.6 | 0.9 | 0.9 | 0.6 | 1.7 | 1.1 | 1.5 | 3.1 | 2.1 | 0.5 | 1.5 | 1.9 | 2.0 | 1.4 |
| Germany | 0.1 | 0.2 | — | -1.3 | 0.5 | 3.4 | 2.2 | 1.3 | 1.7 | 2.3 | 2.5 | 2.4 | 0.9 | -0.5 | -1.7 |
| | 1.5 | 1.6 | 1.4 | 0.1 | 1.9 | 4.8 | 3.6 | 2.7 | 3.1 | 3.7 | 3.9 | 3.8 | 2.3 | 0.9 | -0.3 |
| Greece | -1.5 | -0.6 | -0.6 | 1.4 | — | 1.4 | 0.8 | -0.1 | — | 0.3 | 3.0 | 9.3 | 5.7 | 5.1 | 4.9 |
| | 0.9 | 1.9 | 2.1 | 3.8 | 2.4 | 3.8 | 3.3 | 2.4 | 2.4 | 2.7 | 5.4 | 11.7 | 8.2 | 7.5 | 7.3 |
| Iceland | 2.5 | 2.0 | 2.7 | 4.0 | 6.8 | 10.3 | 5.7 | 6.5 | 9.2 | 10.7 | 11.7 | 13.3 | 14.3 | 10.6 | 9.1 |
| | 4.0 | 3.5 | 4.2 | 5.5 | 8.3 | 11.8 | 7.1 | 8.0 | 11.7 | 12.3 | 13.2 | 14.8 | 15.8 | 12.0 | 10.6 |
| Italy | 5.2 | 6.7 | 8.4 | 8.3 | 8.1 | 10.1 | 8.4 | 7.3 | 9.1 | 9.7 | 8.6 | 12.0 | 12.0 | 9.7 | 9.4 |
| | 6.0 | 7.5 | 9.2 | 9.1 | 8.9 | 10.9 | 9.2 | 8.1 | 9.9 | 10.5 | 9.4 | 12.9 | 12.8 | 10.5 | 10.2 |
| Japan | -1.9 | -1.7 | -0.6 | -0.3 | -0.7 | 1.9 | 2.9 | 3.1 | 4.9 | 4.3 | 4.1 | 3.5 | 2.8 | 2.2 | 1.3 |
| | -1.3 | -1.2 | — | 0.3 | -0.2 | 2.4 | 3.4 | 3.7 | 5.5 | 4.8 | 4.7 | 4.1 | 3.4 | 2.8 | 1.9 |
| Netherlands | 0.8 | 0.5 | 0.4 | 0.1 | 1.1 | 0.9 | 1.9 | 0.4 | 0.8 | 1.3 | 1.5 | 1.7 | 1.9 | 1.1 | 0.8 |
| | 3.5 | 3.2 | 3.1 | 2.8 | 3.8 | 3.6 | 4.6 | 3.1 | 3.5 | 4.0 | 4.2 | 4.4 | 4.6 | 3.8 | 3.5 |
| Norway | -3.2 | -4.5 | -4.8 | -4.4 | -5.2 | -4.7 | -3.3 | -2.5 | -1.8 | -2.3 | -4.3 | -5.4 | -5.4 | -5.4 | -2.5 |
| | -3.0 | -4.2 | -4.5 | -4.1 | -5.0 | -4.5 | -3.0 | -2.2 | -1.5 | -2.0 | -4.0 | -5.1 | -5.2 | -5.1 | -2.2 |
| Spain | -0.7 | 0.3 | -0.1 | -0.4 | 0.6 | — | 0.3 | 0.8 | 1.7 | 1.1 | 1.0 | 1.3 | 3.5 | 3.7 | 3.2 |
| | 0.3 | 1.3 | 0.9 | 0.5 | 1.6 | 1.0 | 1.3 | 1.8 | 2.7 | 2.1 | 2.0 | 2.3 | 4.5 | 4.7 | 4.2 |
| Sweden | -4.4 | -5.9 | -5.2 | -4.0 | -0.8 | -1.6 | -3.9 | -3.7 | -2.2 | 1.7 | 2.6 | 2.1 | 2.6 | 1.6 | 1.1 |
| | -3.3 | -4.7 | -4.0 | -2.9 | 0.4 | -0.4 | -2.8 | -2.5 | -1.0 | 2.9 | 3.7 | 3.2 | 3.8 | 2.8 | 2.3 |
| United Kingdom | -3.0 | -1.6 | 0.8 | 3.6 | 3.7 | 3.2 | 3.4 | 1.7 | 3.8 | 3.2 | 1.1 | -1.8 | -3.3 | -1.6 | -2.0 |
| | -0.7 | 0.7 | 3.1 | 5.9 | 6.0 | 5.5 | 5.7 | 4.0 | 6.1 | 5.5 | 3.5 | 0.5 | -1.0 | 0.7 | 0.4 |
| United States | — | 0.5 | — | 0.2 | -0.7 | 0.9 | -0.4 | -0.6 | -0.9 | -1.2 | -0.7 | -1.6 | -0.3 | 0.2 | 0.5 |
| | 1.8 | 2.3 | 1.8 | 2.0 | 1.1 | 2.6 | 1.4 | 1.2 | 0.9 | 0.6 | 1.1 | 0.2 | 1.4 | 2.0 | 2.2 |
| Total major seven | -0.4 | 0.2 | 0.6 | 0.6 | 0.2 | 2.0 | 1.3 | 1.0 | 1.6 | 1.3 | 1.2 | 0.6 | 0.9 | 1.0 | 0.7 |
| | 1.1 | 1.6 | 1.9 | 2.0 | 1.7 | 3.5 | 2.8 | 2.5 | 3.0 | 2.7 | 2.6 | 2.1 | 2.6 | 3.4 | 2.2 |
| Total smaller countries | -1.6 | -1.6 | -1.3 | -0.7 | -0.5 | 0.1 | -0.7 | 0.1 | 0.5 | 1.3 | 1.4 | 1.7 | 2.2 | 2.6 | 2.6 |
| | -0.4 | -0.4 | -0.1 | 0.5 | 0.7 | 1.3 | 1.9 | 1.1 | 1.8 | 2.5 | 2.6 | 2.9 | 3.4 | 3.8 | 3.8 |
| Total of above countries | -0.5 | -0.1 | 0.2 | 0.4 | 0.1 | 1.7 | 1.2 | 0.9 | 1.5 | 1.3 | 1.2 | 0.7 | 1.1 | 1.2 | 1.0 |
| | 0.9 | 1.4 | 1.6 | 1.9 | 1.5 | 3.2 | 2.6 | 2.3 | 2.9 | 2.7 | 2.6 | 2.2 | 2.5 | 2.6 | 2.4 |

Source: Organization for Economic Cooperation and Development (OECD).

Representative HAMILTON. Mr. Penner, what's your prediction on the dollar?

Mr. PENNER. We have not had a sterling record on that. That's no pun. Our prediction for the dollar this year was that it would decline slightly and obviously that has not happened.

We have been shaken on that in the past. Essentially our forecast is consistent with it being at about the same level right through the end of 1985.

Representative HAMILTON. How do you account for this extraordinary strength? Is it the interest rate differential? Is it the safe haven? It's a combination of things, I guess.

Mr. PENNER. Obviously, we don't account for it very well since we didn't forecast it, and it really is a puzzle. I just think it's a combination of all those factors—high nominal interest rates, a great deal of confidence in this country. I haven't gone abroad since I have held this new job, but when I did earlier I was always impressed that however much people may complain about some of the characteristics of our country, they are really very confident in our economy, and perhaps as important or more important, in our political system. And, of course, I think really very important is this failure of the Western European economies really to start to recover at a rapid rate compared to us, and Canada as well.

Representative HAMILTON. Now, in talking to Congressman Scheuer, you pointed out that we are becoming increasingly dependent on foreign funds to finance our debt. Spell out for me what the risks of that are. Why should we be worried about the fact that we are becoming so dependent on foreign funds?

Mr. PENNER. Well, first of all, I wouldn't call it a risk, but would rather just point out the obvious fact that these foreign funds do not come free. We've got to pay interest and dividends on them.

Representative HAMILTON. You're not disturbed by our being increasingly dependent on foreign funds for financing our debt?

Mr. PENNER. Well, not per se, if I just answer your question yes or no. It's better to have the funds than not to have them.

The problem, I think, is in adjusting to the rapid change. It has been a problem adjusting to the capital inflow when it started to rise and, of course, it has to have a mirror image in the trade deficit. The balance of payments has to balance. So when this money comes in, the dollar will go up enough to develop approximately an equal deficit on the trade side. The speed of that has been very painful. I mean, that's obvious, especially to our important competing sector and more especially to steel, copper, and autos. We know all about that. So that's been a painful adjustment problem.

I am concerned that—and I am not forecasting it certainly—but my worry is if the situation were to change rapidly the other way. If it were to change gradually the other way, we could adjust to it without too much pain. But if for some reason or another the psychology changed and foreigners very suddenly lost confidence in us and the dollar really started to plummet, sure, that would be good for our trade sector. But what you would then see right away is increasing real interest rates. The falling dollar would feed into our inflation rate, and it would be a very tough choice on the part of the Fed as to how to react to that. I wouldn't want to be sitting in their chairs

under those circumstances deciding whether to defend the dollar under those circumstances or not.

In any case, a really quick adjustment would be very difficult to handle, but adjustments that occurred gradually over time would be less of a problem.

Representative HAMILTON. Mr. Penner, I've got a number of other questions for you but we have a vote and we have another witness waiting. So I guess we will have to let you go at this point, reluctantly and with an expression of appreciation to you for your appearance this morning and for your statement and the responses you have made to our questions. It's been a pleasure to have you with us. You get a break here by the votes that are occurring. We thank you, sir.

Mr. PENNER. Thank you very much.

Representative HAMILTON. The subcommittee will stand in recess until we have an opportunity to vote. We will return and then we will hear from Mr. Johnson.

[A brief recess was taken.]

Representative HAMILTON. The subcommittee will resume its sitting. We are very pleased to have with us for the second part of our hearing, Assistant Secretary for Economic Policy, Mr. Manuel Johnson.

Mr. Johnson, your prepared statement will be entered into the record in full. We are very pleased to have you. We look forward to your testimony and you may proceed.

## STATEMENT OF MANUEL H. JOHNSON, ASSISTANT SECRETARY FOR ECONOMIC POLICY, DEPARTMENT OF THE TREASURY

Mr. JOHNSON. Thank you, Mr. Chairman.

I welcome the opportunity to appear before this subcommittee to discuss the relationships between the Federal budget deficit and U.S. interest rates. There is general agreement on the need to work toward a solution to our budgetary difficulties. The Reagan administration believes that deficits matter and that in time they must be reduced. But we do not see convincing evidence of any close shortrun connection between the size of budget deficits and the height of interest rates or the performance of the economy. Indeed, the strength of the current economic expansion directly contradicts the predictions of those who place heavy emphasis upon the alleged crippling effects of deficits and interest rates, especially in the short term.

In the simplest view, it is regarded by some as almost axiomatic that budget deficits inevitably cause high interest rates. The Federal Government runs a deficit and has to borrow. The collision between the enlarged demands for credit and a fixed supply of funds means higher interest rates and less funds for private borrowers. What could be simpler? Unfortunately, simplicity is not always a virtue where complex economic relationships are concerned.

In March the Treasury Department released a comprehensive study dealing with the various economic issues associated with the Federal budget deficit. Probably the most important single conclusion to be drawn from that study is that there are no simple answers about the effects of Federal deficits. For example, the notion that higher deficits cause interest rates to rise and the dollar exchange rate to appreciate is

not at all certain. The direction in which interest rates and exchange rates move as deficits increase depends on a complex set of factors of which the following are only a few possible examples: The state of the business cycle here and abroad; whether the deficits are occasioned by tax reductions or Government spending increases; the prevailing pattern of money supply growth and rates of inflation here and abroad; and the prospective real rates of return in national markets discounted for any anticipated degree of political or economic instability. In other words, uncertainty abroad about economic and political forces.

Even when all of these and similar factors are accounted for, it is still not possible to establish statistically a dependable systematic relationship between Federal budget deficits and interest rates. One reason for this is that over the course of the business cycle there is a fairly straightforward empirical relationship between budget deficits and interest rates, but it runs in precisely the opposite direction from that which the conventional wisdom would require. Budget deficits rise in economic recession when interest rates are relatively low and budget deficits narrow—or should narrow—in economic recovery when interest rates are relatively high. Therefore, over the business cycle, the largest deficits are associated with low interest rates and smaller deficits are typically associated with higher interest rates. Even after correction for such cyclical effects, the deficit-interest rate relationship is weak and uncertain at best. This basic empirical finding which has been duplicated again and again by disinterested academic investigators stands in marked contrast to the assertions of some financial commentators. The persistence of strongly held opinion in the face of contrary evidence is not unusual in the field of economics but it is certainly very pronounced in this particular case.

The lack of any simple unambiguous relationship between deficits and interest rates is underscored by the experience of recent years. In 1982 and 1983, for example, budget deficit projections were rising rapidly, but interest rates, both real and nominal, were generally falling. In 1984, we have seen estimates of the deficit progressively lowered. The fiscal year 1984 deficit estimate has been lowered from about $231 billion on a current services basis in last year's budget to $174 billion in the most recent update, a drop of about $57 billion. At the same time, however, interest rates have been pushed somewhat higher, particularly in the shorter maturities where monetary policy exerts its major effect.

We can only conclude that the deficit-interest rate relationship is a derivative and shifting one. As such, it is unreliable in terms of explaining current economic performance or predicting probably future developments. The shortcomings of the deficit-oriented view of interest rates and economic performance have been clearly demonstrated in recent years.

The strength and composition of the current expansion have come as a total surprise to those who trace a simple connection between budget deficits and interest rates. It was fashionable in early 1984 to argue that the recovery then getting underway would be stunted and subnormal with interest-sensitive sectors of the economy lagging far behind. The prevalent view was that if any expansion worthy of the name were to occur, it would have to be consumer led. In January 1983, the blue chip consensus of private economists was projecting only a

little more than 4 percent real growth during the four quarters of the year and the official administration forecast was only a little more than 3 percent. The actual result turned out to be 6.3 percent real growth, followed by an acceleration to more than an 8.5-percent rate in the first half of this year. As a result, real growth in the current expansion is running well ahead of previous post-Korean war expansions with a 7.2-percent annual rate of growth during the first six quarters compared to a 5.9-percent cyclical average for postwar recoveries.

Contrary to prediction, this has not been a consumer-led recovery. Business-fixed investment has risen at a 16.7-percent, annual rate in the last six quarters, compared with 7.3 percent averaged in the earlier cyclical expansions. Far from leading the recovery, consumer spending ran slightly behind previous experience during the first year of the expansion. With strong growth in the first half of this year, consumer spending has now pushed a little ahead of gains in prior expansions.

It might be pointed out that economic models reflecting a Keynesian orientation projected only a weak economic recovery because of the height of real interest rates. It is curious now to hear that this has, in fact, been a Keynesian expansion fueled by large deficits. It is difficult to see how this can be the case unless the link between large budget deficits and high real interest rates has quietly been abandoned.

The near-term outlook for the economy is generally favorable with moderate real growth expected to continue in a relatively noninflationary environment.

The more rapid growth and lower inflation during the first half of this year than we or virtually anyone expected led to a markup of real GNP growth for the entire year 1984 and also a markdown of inflation. Year over year for 1984, we projected at midsession that real GNP would rise by 7.2 percent. For years beyond 1984, real GNP is expected to grow at about the 4-percent rate and inflation is expected to decrease slightly to 3.6 percent.

The midsession review of the budget projects a decline in the deficit from just under 5 percent of GNP in 1984 to 2.6 percent of GNP in 1989. State and local surpluses are expected to run around 1 percent of GNP for the next several years. Further deficit reduction will not occur automatically, however, unless GNP grows above expectation, but will require further action. The downpayment program—on which legislative action is still incomplete—has been an important first step. It will likely be necessary to follow through in future years with further fiscal action.

The crucial question, though, is whether that fiscal action will be growth oriented or whether it will revert back to the older pattern of higher and higher taxes. The essence of the Federal budget problem is clear for all to see. Federal tax receipts are running near—even slightly above—the normal range of experience since the mid-1960's. The American people are not undertaxed. Federal outlays, on the other hand, are living a life of their own, moving far above the range of previous experience.

Expansion of the private economy and restraint of Federal spending are the keys to the budgetary problem. There can be no solution to the problem without private sector growth. With that growth, it would require only modest restraint on Federal spending to reach our goals.

If the annual rise of budget outlays in nominal terms could be held to 5 percentage points per year instead of the 7.4 percent that is projected, the budget would be virtually in balance by the end of the decade. And, over that 5-year period the Federal Government would still be spending about $5 trillion, more than $20,000 per member of the current U.S. population. Surely some such modest restraint in Federal spending may fall within the realm of what is possible.

Tax increases and spending cuts are not interchangeable alternatives for deficit reduction. Tax increases repress the growth of the private sector, worsen the economic outlook and make budget balance that much harder to achieve. Spending reductions free up resources for faster growth and reduce the task of making ends meet. Too little attention is being given to cutting the growth rate of Federal spending. On the other hand, it is disheartening that so soon after the pathbreaking 1981 tax cuts which we feel helped trigger the strongest peacetime expansion in the past 50 years, proposals for tax increases rank so high on some political agendas. Tax increases should only be viewed as a last resort, not as the first step to take along with a few token cuts in Federal spending.

The absence of any clear connection between budget deficits and interest rates suggests that monetary rather than fiscal considerations are most relevant in explaining recent interest rate developments. Financial and credit markets have been remarkably successful in accommodating the robust economic expansion of the past 18 months; and until recently, interest rates had been relatively stable.

This spring, however, demands for credit did rise sharply. To an important extent, these demands were bloated by special factors. For example, a large part of the first quarter's very rapid rise in GNP was due to inventory accumulation, which is typically financed through short-term credit. These demands certainly were a major factor in the $36.5 billion rise in short-term business credit in the first half of the year.

Merger and takeover activity was also an important source of short-term credit demand in the first half of 1984, accounting for about $17 billion of the first half rise in short-term business credit. These demands have apparently contributed little, if anything, on balance to short-term business credit demand in the third quarter. Also, it's important to remember that mergers only cause temporary credit pressures because once these transactions are complete funds are redeposited into savings and therefore the credit market returns to the previous level.

Not surprisingly, these demands led to gradually increasing short-term interest rates in the first half of the year, as indicated by the four successive rises in the prime from 11 percent at the beginning of the year to its current 13-percent level set in mid-June. This upward pressure on short-term rates was further encouraged by a late March tightening by the Fed.

Developments in long-term credit markets have been decidedly more encouraging, especially since late May. Earlier in the year, market participants still had not become convinced that inflation was not about to reemerge. That psychology has changed. There have been numerous signs that the disinflationary process is still underway. Sensitive commodity prices have been under downward pressure.

Wage increases have remained moderate and unit labor costs have been relatively stable. The GNP deflator rose at less than a 4-percent annual rate in the first half of the year and there are few signs that any acceleration of inflation is imminent. The result has been a drop of more than 150-basis points—that is, 1.5-percentage points—in the yield on long-term Treasury bonds and a fall of about the same magnitude in the cost of long-term corporate borrowing. Of special importance to the average American is the fact that mortgage rates—which generally lag other rates—have also moved lower in the very recent period.

The impact of special factors and market psychology on interest rates makes any forecasting of rate levels a complex job at best and one that for an economist inspires a degree of caution at the least. Nonetheless, it would seem that we now have in place the preconditions for a declining trend for both short- and long-term rates. The realization of those lower rate levels will, of course, depend on the course of monetary policy and the market's assessment of that policy.

One of the major elements of the Reagan administration's economic program has been that the Federal Reserve supply sufficient money at a steady and predictable pace to ensure solid, noninflationary real growth. For the most part, we have favored the growth rate ranges selected by the Fed. Nevertheless, when those ranges have seemed inappropriate or when actual growth of the money supply has run contrary to the target ranges, we have not hesitated to express our views.

Growth of the money supply this summer has been very sluggish. The current level of the money supply is only marginally above that in early June. Whether this slower money growth represents a threat to future economic activity is not clear as yet. Certainly, it is important to avoid the very serious risks to the economy from overly slow money growth.

One reason for this concern is that monetary velocity—the amount of GNP that a dollar of money supports—in other words, the rate of turnover of money in the economy—is still very unpredictable. Usually velocity growth in the first year of an economic expansion averages about 6 percent or 5 to 6 percent. In 1983, however, velocity growth was only 0.3 percent. In the first half of 1984, velocity rebounded to more normal levels but its erratic pattern in the recent past raises doubts as to what it may do in the near future.

Money growth that is too slow may also be risky at the current time in view of some indication of liquidity strains in the financial system. Internationally, this is reflected in downward pressure on commodity prices, the international debt problem and an intensified appreciation of the dollar against other major currencies. Domestically, the yield curve has flattened as some investors have shown increased reference for longer term instruments. But the Fed has kept sufficient pressure on bank reserves and short-term money markets to forestall any comparable decline in short-term interest rates. As a result, money is growing very slowly and interest rates remain relatively high.

It is too soon to say that this will necessarily prejudice the continuation of a strong economic expansion. After all, we support generally the target range that the Fed seeks and if they plan to have growth in the upper half of those ranges we see no problem. But if very sluggish monetary growth were to continue and short-term interest rates were to be forced above long-term rates, the outlook for the

economy would surely suffer. In the near term at least, such considerations may prove to be more important than some longer term relationship that may or may not exist between budget deficits and interest rates.

In conclusion, there is simply no convincing evidence of a close linkage between budget deficits and interest rates. The enduring nature of the controversy testifies, however, to the fact that both budget deficits and interest rates are important in their own right. Budget deficits are too large and will have to be reduced gradually over time. The highest priority should be attached to the progrowth policy of cutting Government spending. In our view, raising taxes would be counterproductive.

Interest rates are also too high. Their continuing height reflects the deep impact that a decade and a half of inflation had on financial markets. Now long-term yields have fallen and markets are adjusting to lower and more realistic projections of future inflation. In such a setting, the Federal Reserve will want to be sure that its own short-term monetary measures do not keep short-term interest rates artificially high or the rate of growth in money supply unduly low.

That ends my statement. I would be happy to answer any questions.

[The prepared statement of Mr. Johnson follows:]

PREPARED STATEMENT OF MANUEL H. JOHNSON

## Introduction

I welcome the opportunity to appear before the Joint Economic Committee to discuss possible relationships between the size of the Federal budget deficit and the height of U.S. interest rates. There is general agreement on the need to work toward a long-term solution to our budgetary difficulties. The Reagan Administration believes that deficits matter and that in time they must be reduced. But we do not see convincing evidence of any close short-run connection between the size of budget deficits and the height of interest rates or the performance of the economy. Indeed, the strength of the current economic expansion directly contradicts the predictions of those who place heavy emphasis upon the alleged crippling effects of deficits and interest rates.

A slightly more sophisticated approach recognizes the looseness of the short-run relationships among deficits, interest rates and other economic variables, but stresses the long-run threat that chronic Federal budget deficits could pose to national prosperity. Even this approach can lead to faulty conclusions if the mere size of the deficit is the major object of attention. The deficit is simply a residual, the difference between flows of receipts and outlays, which in turn depend upon tax rates, private sector incentives, the pace of economic expansion, the momentum of government spending, and other factors. It makes a crucial difference in terms of long-run economic performance whether deficits are attacked from the spending-side, as they should be in our opinion, or whether private incentives to work, save and invest are further eroded by higher taxes.

In the last analysis, large budget deficits and high interest rates are largely unrelated phenomena. They are more closely linked in political rhetoric than in the professional economic

literature. Both large deficits and high interest rates reflect deeper underlying fiscal and monetary imbalances. The deficit-interest rate debate will serve a useful purpose in my opinion only to the extent that it directs attention to those underlying imbalances and stimulates the development of a political consensus to deal with them.

## Budget Deficits and Interest Rates

In the simplest view, it is regarded by some as almost axiomatic that budget deficits inevitably cause high interest rates. The Federal government runs a deficit and has to borrow. The collision between the enlarged demands for credit and a fixed supply of funds means higher interest rates and less funds for private borrowers. What could be simpler? Unfortunately, simplicity is not always a virtue where complex economic relationships are concerned.

In March the Treasury Department released a comprehensive study dealing with the various economic issues associated with the Federal budget deficit. Probably the most important single conclusion to be drawn from that study is that there are no simple answers about the effects of Federal deficits. For example, the notion that higher deficits cause interest rates to rise and the dollar exchange rate to appreciate is not at all certain. The direction in which interest rates and exchange rates move as deficits increase depends on a complex set of factors of which the following are only a few possible examples:

- The state of the business cycle here and abroad.
- Whether the deficits are occasioned by tax reductions or government spending increases.
- The prevailing pattern of money supply growth and rates of inflation here and abroad.
- The prospective real rates of return in national markets discounted for any anticipated degree of political or economic instability.

Even when all of these and similar factors are accounted for, it is still not possible to establish statistically a dependable systematic relationship between Federal budget deficits and interest rates. One reason for this is that over the course of the business cycle there <u>is</u> a fairly straightforward empirical relationship between budget deficits and interest rates, but it

runs in precisely the opposite direction from that which the conventional wisdom would require. Budget deficits rise in economic recession when interest rates are relatively low and budget deficits narrow -- or should narrow -- in economic recovery when interest rates are relatively high. Therefore, over the business cycle, the largest deficits are associated with low interest rates and smaller deficits are typically associated with higher interest rates. Even after correction for such cyclical effects, the deficit-interest rate relationship is weak and uncertain at best. This basic empirical finding which has been duplicated again and again by disinterested academic investigators stands in marked contrast to the assertions of some financial commentators. The persistence of strongly held opinion in the face of contrary evidence is not unusual in the field of economics but it is certainly very pronounced in this particular case.

The lack of any simple unambiguous relationship between deficits and interest rates is underscored by the experience of recent years. In 1982 and 1983, for example, budget deficit projections were rising rapidly as shown in Chart 1, but interest rates, both real and nominal, were generally falling. In 1984, we have seen estimates of the deficit progressively lowered. The FY 1984 deficit estimate has been lowered from $231 billion on a current services basis in last year's budget to $174 billion in the most recent update, a drop of $57 billion. At the same time, however, interest rates have been pushed somewhat higher, particularly in the shorter maturities where monetary policy exerts its major effect.

We can only conclude that the deficit-interest rate relationship is a derivative and shifting one. As such, it is virtually worthless in terms of explaining current economic performance or predicting probable future developments. The shortcomings of the deficit-oriented view of interest rates and economic performance have been clearly demonstrated in recent years.

## Recent Economic Performance

The strength and composition of the current expansion have come as a total surprise to those who trace a simple connection between budget deficits and interest rates. It was fashionable in early 1983 to argue that the recovery then getting underway would be stunted and subnormal with interest-sensitive sectors of the economy lagging far behind. The prevalent view was that if any expansion worthy of the name were to occur, it would have to be consumer-led. In January 1983, the Blue Chip consensus of private economists (more than forty economic forecasters at major banks, business corporations and academic research organizations) was projecting only a little more than 4 percent real growth during the four quarters of the year and the official Administration forecast was only a little more than 3 percent. The actual result turned out to be 6.3 percent real growth,

followed by an acceleration to more than an 8-1/2 percent rate in the first half of this year. As a result, real growth in the current expansion is running well ahead of previous post-Korean expansions with a 7.2 percent annual rate of growth during the first six quarters compared to a 5.9 percent cyclical average.

Contrary to prediction, this has not been a consumer-led recovery. Business fixed investment has risen at a 16.7 percent annual rate in the last six quarters, compared with 7.3 percent averaged in the earlier cyclical expansions as shown in Chart 2. Far from leading the recovery, consumer spending ran slightly behind previous experience during the first year of the expansion. With strong growth in the first half of this year, consumer spending has now pushed a little ahead of gains in prior expansions as shown in the chart.

It might be pointed out that economic models reflecting a Keynesian orientation projected only a weak economic recovery because of the height of real interest rates. It is curious now to hear that this has, in fact, been a Keynesian expansion fueled by large deficits. It is difficult to see how this can be the case unless the link between large budget deficits and high real interest rates has quietly been abandoned. It may also deserve mention that the only consistently accurate economic projections recently have come from those supply-side economists who have placed major stress on the incentive effects stemming from the Reagan tax cuts and have regarded the budget deficit as a transitional phenomenon of lesser significance.

## The Economic and Budgetary Outlook

The near-term outlook for the economy is generally favorable with moderate real growth expected to continue in a relatively noninflationary environment.

The Administration economic forecast contained in the Mid-Session Budget Review was updated to incorporate the latest economic developments at the time, but other than that it was little changed from the path used in the April update or the assumptions underlying the January budget. The more rapid growth and lower inflation during the first half of this year than we or virtually anyone expected led to a markup of real GNP growth for the entire year 1984 and also a markdown of inflation. Year-over-year for 1984, we projected at Mid-Session that real GNP would rise by 7.2 percent. For years beyond 1984, the pattern of real growth and inflation was virtually unchanged from the prior forecasts.

The dramatic improvement in unemployment led to a markdown of projections of the unemployment rate over the next several years. On the other hand, the forecast of interest rates was pushed up (by 0.8 percentage point on the 3-month Treasury bill rate for the fourth quarter of this year and about 1-1/4 percentage points for all of next year). Some forecast details are provided in Table 1.

The Mid-Session Review of the Budget projects a decline in the deficit from just under 5 percent of GNP in 1984 to 2.6 percent of GNP in 1989. State and local surpluses are expected to run around 1 percent of GNP for the next several years. These surpluses will offset part of the Federal deficits and should reduce the impact of total government borrowing on the credit markets to tolerable proportions. This favorable result will not occur automatically but will require further action. The downpayment program -- on which legislative action is still incomplete -- has been an important first step. It will be necessary to follow through in future years with further fiscal action.

The crucial question is whether that fiscal action will be growth oriented or whether it will revert back to the older pattern of higher and higher taxes. The essence of the Federal budget problem is clear for all to see. Federal tax receipts are running near -- even slightly above -- the normal range of experience since the mid-1960's. The American people are not undertaxed. Federal outlays, on the other hand, are living a life of their own, moving far above the range of previous experience. This is shown simply but conclusively in Table 2.

Expansion of the private economy and restraint of Federal spending are the keys to the budgetary problem. There can be no solution to the problem without private sector growth. With that growth, it would require only modest restraint on Federal spending to reach our goals. If the annual rise of budget outlays in nominal terms could be held to 5 percentage points per year instead of the 7.4 percent that is projected, the budget would be virtually in balance by the end of the decade. And, over that five year period the Federal government would still be spending about 5 trillion dollars, more than $20,000 per member of the current U.S. population. Surely some such modest restraint in Federal spending may fall within the realm of what is possible.

Tax increases and spending cuts are not interchangeable alternatives for deficit reduction. Tax increases repress the growth of the private sector, worsen the economic outlook and make budget balance that much harder to achieve. Spending reductions free up resources for faster growth and reduce the task of making ends meet. Too little attention is being given to cutting the growth rate of Federal spending. On the other hand, it is disheartening that so soon after the pathbreaking 1981 tax cuts which triggered the strongest peacetime expansion in the past fifty years, proposals for tax increases rank so high on some political agendas. Tax increases should only be viewed as a last resort, not as the first step to take along with a few token cuts in Federal spending.

## Developments in Financial and Credit Markets

The absence of any clear connection between budget deficits and interest rates suggests that monetary rather than fiscal considerations are most relevant in explaining recent interest rate developments. Financial and credit markets have been remarkably successful in accommodating the robust economic expansion of the past 18 months; and until recently, interest rates had been relatively stable.

Before turning to developments in 1984, there is an important point about the 1983 experience that should be underscored. That is that the relative stability in interest rates took place in an environment of heavy Treasury borrowing and peak Federal deficits. Moreover, that period was also one during which bank reserves were actually declining due to the Fed's tight policy stance. Thus, it is entirely possible that with a somewhat less stringent monetary policy interest rates might have actually declined in the latter half of 1983 despite the Treasury's heavy requirements.

A major explanation for the calmness of financial and credit markets in 1983 and for the relative stability of interest rates lies in the fact that corporations experienced large cash flows because of recovery from the recession and the beneficial effects of the 1981 tax legislation. This meant, in turn, that their needs could be financed internally rather than through the credit markets. This heavy reliance on internally-generated funds was reflected in the fact the flow of funds "financing gap" -- the difference between capital expenditures and internally-generated funds -- reached a record negative level in 1983.

This situation could not reasonably be expected to last forever, especially with economic growth continuing very strong; and this spring demands for credit rose sharply. To an important extent these demands were bloated by special factors. For example, a large part of the first quarter's very rapid rise in GNP was due to inventory accumulation, which is typically financed through short-term credit. These demands certainly were a major factor in the $36.5 billion rise in short-term business credit in the first half of the year.

Merger and takeover activity was also an important source of short-term credit demand in the first half of 1984, accounting for about $17 billion of the first half rise in short-term business credit. These demands have apparently contributed little if anything on balance to short-term business credit demand in the third quarter.

Not surprisingly, these demands led to gradually increasing short-term interest rates in the first half of the year, as indicated by the four successive rises in the prime from 11 percent at the beginning of the year to its current 13 percent level set in

mid-June. This upward pressure on short-term rates was further encouraged by a late March tightening by the Fed.

Many of the factors that pushed up the demand for short-term funds in the spring seem to have abated. Nevertheless, the Fed's tendency toward a relatively stringent monetary policy has continued to keep upward pressure on the Federal funds rate and, in turn, on other short-term rates. In the last week or so, some observers feel that the Fed has once again become concerned about the very sluggish growth of the money supply and has acted to forestall additional upward pressures on the money market and other short-term rates. This remains to be seen.

Developments in long-term credit markets have been decidedly more encouraging, especially since late May. Earlier in the year, market participants still had not become convinced that inflation was not about to reemerge. That psychology has changed. There have been numerous signs that the disinflationary process is still underway. Sensitive commodity prices have been under downward pressure. Wage increases have remained moderate and unit labor costs have been relatively stable. The GNP deflator rose at less than a 4 percent annual rate in the first half of the year and there are few signs that any acceleration of inflation is imminent. The result has been a drop of more than 150 basis points in the yield on long-term Treasury bonds and a fall of about the same magnitude in the cost of long-term corporate borrowing. Of special importance to the average American is the fact that mortgage rates -- which generally lag other rates -- have also moved lower recently.

The impact of special factors and market psychology on interest rates makes any forecasting of rate levels a complex job at best and one that for an economist inspires a degree of caution at the least. Nonetheless, it would seem that we now have in place the preconditions for a declining trend for both short- and long-term rates. The realization of those lower rate levels will, of course, depend in the final analysis on the performance of the economy. In the near term, however, the primary influence on rates will be the course of monetary policy and the market's assessment of that policy.

## Monetary Policy Developments

One of the major elements of the Reagan Administration's economic program has been that the Federal Reserve supply sufficient money at a steady and predictable pace to insure solid, noninflationary real GNP growth. For the most part, we have favored the growth rate ranges selected by the Fed. Nevertheless, when those ranges have seemed inappropriate or when actual growth of the money supply has run contrary to the target ranges, we have not hesitated to express our views.

Growth of the money supply this summer has been very sluggish. The current level of the money supply is only marginally above that in early June. Whether this slower money growth represents a threat to future economic activity is not clear as yet. Certainly, it is important to avoid the very serious risks to the economy from overly slow money growth.

One reason for this concern is that monetary velocity -- the amount of GNP that a dollar of money supports -- is still very unpredictable. Usually velocity growth in the first year of an economic expansion averages about 5 percent. In 1983, however, velocity growth was only 0.3 percent. In the first half of 1984, velocity rebounded to more normal levels but its erratic pattern in the recent past raises doubts as to what it may do in the near future.

Slow money growth may also be risky at the current time in view of some indication of liquidity strains in the financial system. Internationally, this is reflected in downward pressure on commodity prices, the international debt problem and an intensified appreciation of the dollar against other major currencies. Domestically, the yield curve has flattened as some investors have shown increased preference for longer-term instruments. But the Fed has kept sufficient pressure on bank reserves and short-term money markets to forestall any comparable decline in short-term interest rates. As a result, money is growing very slowly and interest rates remain relatively high.

It is too soon to say that this will necessarily prejudice the continuation of a strong economic expansion, but if very sluggish monetary growth were to continue and short-term interest rates were to be forced above long-term rates, the outlook for the economy would surely suffer. In the near term at least, such considerations may prove to be more important than some longer-term relationship that may or may not exist between budget deficits and interest rates.

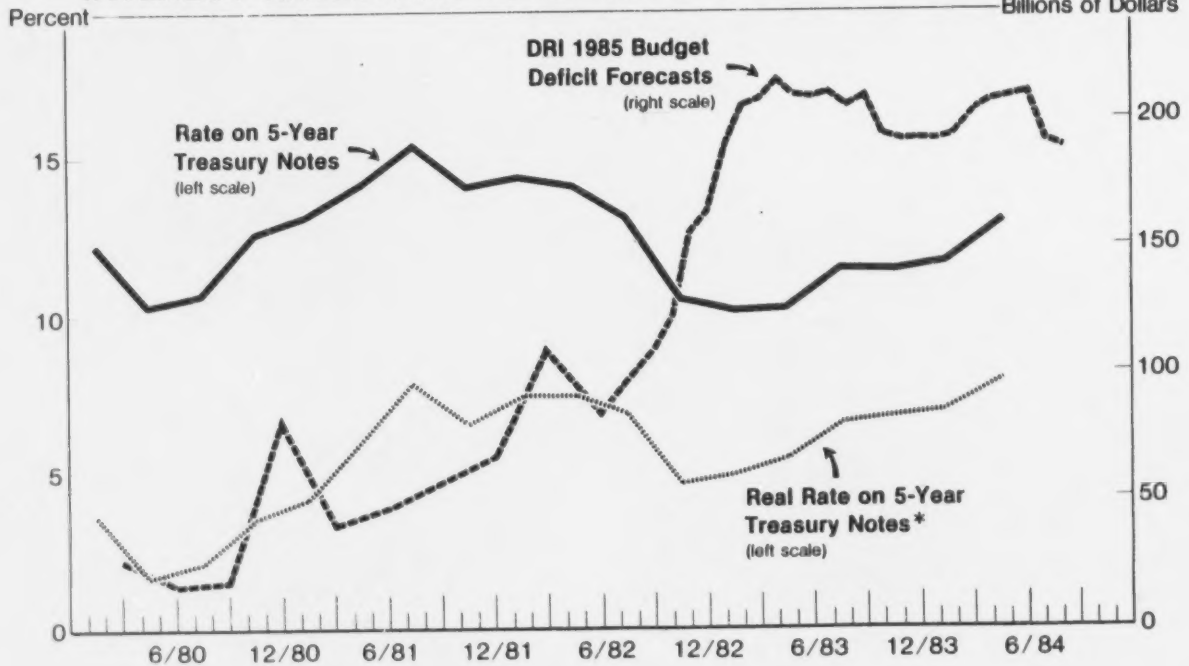
## Conclusion

There is simply no convincing evidence of a close linkage between budget deficits and interest rates. The enduring nature of the controversy testifies, however, to the fact that both budget deficits and interest rates are important in their own right. Budget deficits are too large and will have to be reduced gradually over time. The highest priority should be attached to the pro-growth policy of cutting government spending. In our view, raising taxes would be counter-productive.

Interest rates are also too high. Their continuing height reflects the deep impact that a decade and a half of inflation had on financial markets. Now long-term yields have fallen and markets are adjusting to lower and more realistic projections of future inflation. In such a setting, the Federal Reserve will want to be sure that its own short-term monetary measures do not keep short-term interest rates artifically high or the rate of growth in money unduly low.

Chart 1

## INTEREST RATES AND FORECASTS OF OUTYEAR DEFICITS

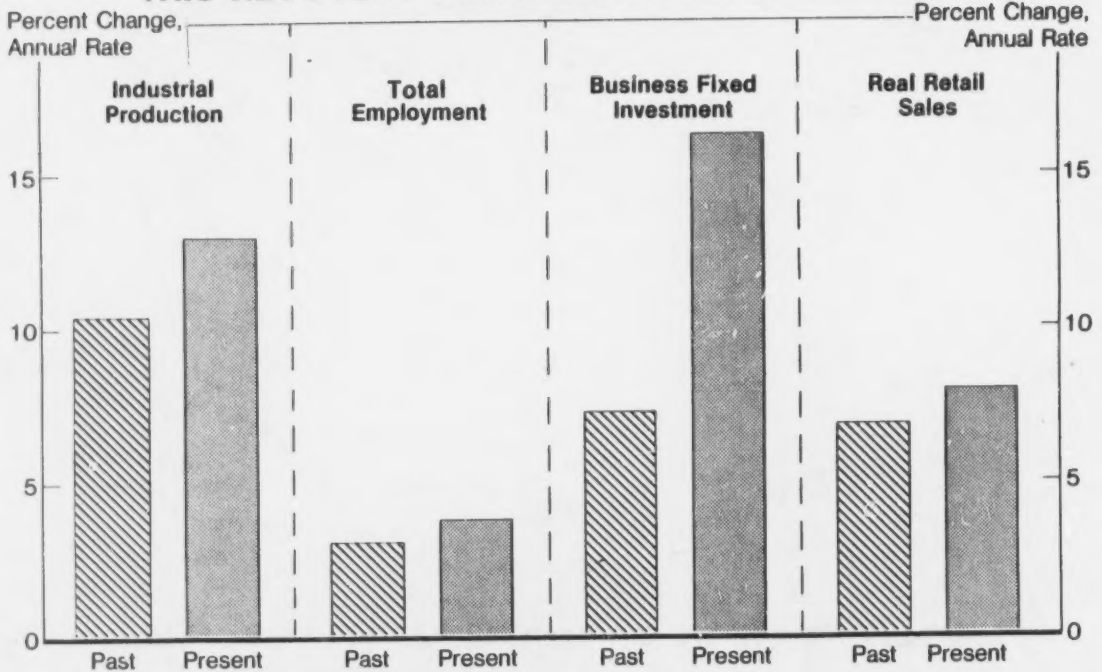



* Nominal interest rate less DRI forecast of inflation through 1985.

September 12, 1984 A53

Chart 2

## COMPARISON OF THIS RECOVERY WITH PREVIOUS RECOVERIES*




* Post-Korean War recoveries excluding the short-lived 1980 recovery. First twenty months for Industrial Production and Real Retail Sales; first twenty-one months for Employment; first six quarters for Business Fixed Investment.

September 7, 1984 A44a

Table 1

# THE ADMINISTRATION ECONOMIC FORECAST

| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|---|---|
| | | | Year-to-year | | | |
| **Percent change** | | | | | | |
| Nominal GNP | 11.5 | 9.2 | 8.7 | 8.4 | 8.1 | 7.6 |
| Real GNP | 7.2 | 4.3 | 4.0 | 4.0 | 4.0 | 3.9 |
| GNP deflator | 4.0 | 4.7 | 4.5 | 4.2 | 3.9 | 3.6 |
| **Percent (avg. for year)** | | | | | | |
| Unemployment rate* | 7.2 | 6.6 | 6.4 | 6.2 | 5.9 | 5.7 |
| 3-mo. Treas. bill rate | 9.5 | 9.3 | 8.5 | 7.2 | 5.9 | 5.1 |
| | | | Fourth-quarter to fourth-quarter | | | |
| **Percent change** | | | | | | |
| Nominal GNP | 11.2 | 8.9 | 8.6 | 8.3 | 7.9 | 7.4 |
| Real GNP | 6.5 | 4.0 | 4.0 | 4.0 | 4.0 | 3.7 |
| GNP deflator | 4.4 | 4.7 | 4.4 | 4.1 | 3.8 | 3.5 |
| **Percent (fourth quarter)** | | | | | | |
| Unemployment rate* | 6.8 | 6.5 | 6.3 | 6.1 | 5.8 | 5.7 |
| 3-mo. Treas. bill rate | 9.6 | 9.1 | 8.1 | 6.7 | 5.5 | 5.0 |

*Based on total labor force, including armed forces stationed in this country.

September 12, 1984 A350

Table 2

# OUTLAYS AND RECEIPTS AS PERCENT OF GNP

| | Receipts | Outlays* |
|---|---|---|
| 1985 - 1989 | 19.5 | 23.2 |
| 1984 | 18.7 | 23.9 |
| 1983 | 18.6 | 25.1 |
| 1982 | 20.3 | 24.5 |
| 1981 | 20.8 | 23.5 |
| 1980 | 20.1 | 22.9 |
| 1964 - 1979 (avg.) | 18.8 | 20.5 |

*Including off - budget spending

Representative HAMILTON. Thank you very much, Mr. Johnson.

Suppose in the sentence that opens your conclusion section you struck the word "close," so that it reads: "There is simply no convincing evidence of a linkage between budget deficits and interest rates."

Would you think that would be an accurate statement? In the final section of your prepared statement's conclusion, I'm wondering if you struck the word "close" if you would then still agree to the statement.

Mr. Johnson. Well, I think that one reason for an adjustment there is that there are some studies that find some linkage. However, the vast majority of the studies basically show no systematic relationship between budget deficits and interest rates, as Mr. Penner pointed out when he was here earlier. However, I thought maybe that it's necessary at least to acknowledge that in fact there are some studies that may in fact show some relationship between the two. But, as I mentioned, the majority find no systematic relationship whatsoever.

I think Mr. Penner was right in his conclusions, that what you have to conclude from the vast amount of research which has been done on this topic is that there is really no convincing evidence and, in fact, we really don't have any good, solid empirical work to support any conclusions one way or the other.

Representative HAMILTON. Would you agree or disagree with the statement that the size of the Government deficit influences the level of interest rates?

Mr. JOHNSON. Well, I think that our research is unable to find, as I mentioned, a systematic relationship between the size of the deficit and interest rates.

We have also looked at the things Mr. Penner mentioned, which are changes in the Federal debt held by the public or the level of the Federal debt and tried to relate that to interest rate changes. We have been unable to actually find any systematic relationship of the deficit or the debt with interest rates.

Representative HAMILTON. Now let me repeat my statement again.

Mr. JOHNSON. OK.

Representative HAMILTON. I understand that the data may be inconclusive about the establishment of a systematic relationship. Clearly, when you're talking about economic relationships you've got a lot of variables to look at and your statement clearly points that out. There are a lot of factors to be considered.

Mr. JOHNSON. Absolutely.

Representative HAMILTON. I think your statement is quite right when you say that budget deficits inevitably cause high interest rates is the simplistic view. I think all of us would agree that that's a bad statement.

On the other hand, I'm going the other way now and I'm just saying, would you agree that the size of the Government deficit is one factor that influences the level of interest rates?

Mr. JOHNSON. Yes, I would say that it is one factor. The point I was trying to make earlier—and I think you have pinpointed it—is that in fact if you could isolate all these other factors influencing interest rates simultaneously with the deficit, you might find a relationship between the deficit and interest rates. So that, in fact, holding everything else the same, I think it is clear that the deficit would have an effect.

But what I think we're finding in our empirical research is the fact that really that assumption of other factors not changing is just not a valid one, that so many other factors are influenced by the economic conditions that also influence the deficit that we can't pick up the systematic relationship.

So I think that that's why the empirical work comes out the way it does.

Representative HAMILTON. I was interested in your statement with regard to inflation. You indicated there that you thought that psychology had changed and that there are now numerous signs that the disinflationary process is still underway.

Does that mean you expect the inflation rate to continue to go down?

Mr. JOHNSON. Well, in our midsession review of the budget we show that we expect the inflation rate to continue to very gradually decelerate to about the 3.6-percent rate of growth in 1989. However, between now and the end of 1985, I think that we show in our forecast a fairly stable inflation rate of around a 4- or 4.5-percent range.

We do I think still see disinflationary forces at work. So we are quite encouraged and feel confident in our assumptions in our budget of a continuing deceleration of inflation.

Representative HAMILTON. Is the risk to the economy greater from inflation or disinflation?

Mr. JOHNSON. Well, I think that there are risks from sharp movements in either direction. For instance, if inflation were to increase at too sharp a rate so that there was really no period of transition for people to adjust their financial portfolios or their investment plans, as prices went up relative to their expectations, in fact, you get very damaging economic results, simply because costs would get out of line very rapidly for businesses and therefore they would have to make fairly dramatic changes by laying off people and shutting down plants.

The same is true if you have very sharp disinflation or deflation. When the rate of growth of prices are falling so sharply relative to expectations that people's costs are too high relative to what their expectations of their prices are going to be, then they make the same sort of adjustments in their business practices. They have to try and dramatically reduce their labor costs by layoffs and the same with investment.

So, if expected prices change sharply relative to what people expect for the future, then you can have damaging economic results. That's why we have sought a policy of systematic gradual deceleration in inflation, and the same is true with dealing with the deficit in a policy sense.

Representative HAMILTON. How would you feel about our economic situation if we do not get the kind of cut in growth of spending that you advocate in your statement? Let's assume for the moment that you don't get it, and I must say the evidence thus far is we are not going to get it. It's desirable, let us agree, that you get a cut in spending, but Federal spending is not going down. It's going up. It's going up in relationship to GNP and I pose to you then the question, what if you don't get a cut in Federal spending?

Mr. JOHNSON. Well, that poses a serious problem for the economy I think because you're left with two choices—well, you're left with three choices, I guess for financing the rapid rise in the level of Gov-

ernment spending. You can raise taxes to finance it, you can continue to borrow at increasing rates, or you can finance it by money creation. None of those alternatives are desirable.

So, I think that if we were faced with a situation where we could not control spending, the outlook is not good in the long term. I don't want to say that this would change things dramatically in the short term, but it certainly would affect the situation over the long term because you are not reducing the rate at which resources are being preempted from private use for productive measures, for investment, growth in capital stock, more job creation, and income creation. You would be forced, if you continued to borrow, to drain savings from the private sector through deficit finance, or if you decided to finance that spending by increased taxes you would be facing the same difficult economic problems by having to drain incomes from private individuals to support runaway Government spending. Therefore, you would be affecting private growth the same way.

One additional I think damaging factor about trying to tax-finance more Government spending in a large way is that not only do you drain private incomes by the increase in the level of taxes, but you create tremendous disincentives if you have to raise marginal tax rates in order to raise those revenues. So that not only do you affect the level of income by draining disposable income from individuals, but you also affect their incentives to produce, their incentives to save, and their incentives to invest by actually having to raise marginal tax rates on their income earning efforts.

I think that those are all damaging alternatives—seriously damaging, and the same goes for rapid money growth. If you have to try to keep the economy expanding so that you don't drain income from the private sector to finance Government spending by creating excessive amounts of money to buy the debt, then ultimately that will lead to higher inflationary expectations and at some point actually higher inflation.

Representative HAMILTON. Which of the three alternatives you spell out in that circumstance is the least undesirable?

Mr. JOHNSON. Well, I don't know. I would not want to hazard a guess because some of these alternatives are more damaging under different circumstances than others. But my preference obviously is not to have to do it on the tax side, but none of these are good choices.

Representative HAMILTON. If you had declining interest rates which led to a decline in the value of the dollar, what kind of steps do you think the administration would take to curb inflation?

Mr. JOHNSON. What did you say brought about the decline in the dollar?

Representative HAMILTON. If you had a decline in interest rates and that brought about or contributed to a decline in the dollar, presumably under that circumstance you would have upward pressure on the inflation rate.

Mr. JOHNSON. Well, it could. First of all, let me say that the relative interest rates in the United States versus interest rates abroad are only one factor affecting the exchange rate.

We have been able to observe over the last several years, in fact, that even in periods when interest rates were falling, like the 1982 period, for instance, we still got a sharp appreciation in the dollar exchange

rate. There's not a systematic relationship between the interest rate and the exchange rate. There could be other factors, like the rate of growth in the U.S. economy and, therefore, the better investment opportunities that exist in the United States; the relatively lower inflation rate that might be available in the United States; and the safe haven nature of the U.S. dollar relative to countries with political and economic instability abroad.

So if you could assume all those things weren't changing and say that you had a drop in the interest rate relative to the interest rate in other countries, you might indeed have a decline in the dollar exchange rate and that obviously would change the terms of trade for certain commodities almost immediately, but it would have a very gradual impact on prices over time of other traded goods. But indeed it would put some pressure on prices by making foreign imported goods relatively more expensive than they have been in the past and some substitution probably for domestically produced goods at possibly higher prices.

However, this takes a long time to work itself out. There's about a 2-year lag between the time there's a change in the dollar exchange rate and the time it ultimately works its way into prices.

At the same time, if that reduction in the dollar is a result of a decline in the real interest rate due to lower risks and that real interest rate decline leads to a stimulation of more capital spending and growth in the capital stock through investment, then in fact we would be expanding plant capacity and expanding industrial productivity, so that this would create a dampening effect on any inflationary pressures created by the decline of the dollar.

It's not clear even if you just assume that the real interest rate declines relative to other countries and causes a decline in the dollar, that in the long run you will get more inflation from that. It could be a canceling situation. It depends on why the real interest rate falls. If the real interest rate has fallen because you have reduced an element of uncertainty about the future in terms of either whether there's more inflation expected or you cut the deficit or the rate of growth of Federal spending and there is a stronger feeling about growth prospects in the future and therefore the rate of return on capital investment looks better to some extent because you reduced this uncertainty premium on interest rates, in fact that could have a positive effect on inflation rather than a negative effect.

However, if you reduced the real interest rate because the economy is weakening and there are fewer credit demands for investment purposes, then in fact this could have a damaging effect on inflationary pressures to some extent.

Representative HAMILTON. OK, Mr. Johnson. I think that's all the questions I have. I thank you for your appearance this morning.

Mr. JOHNSON. Thank you.

Representative HAMILTON. The subcommittee stands adjourned.

[Whereupon, at 11:55 a.m., the subcommittee adjourned, subject to the call of the Chair.]

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